Fujitsu M10-4/Fujitsu M10-4S/ SPARC M10-4/SPARC M10-4S

Service Manual

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Preface

This document describes the maintenance procedure for Oracle or Fujitsu SPARC M10-4/M10-4S and the crossbar box. The maintenance work should be performed by service engineers and/or field engineers.

Fujitsu M10 is sold as SPARC M10 Systems by Fujitsu in Japan.
Fujitsu M10 and SPARC M10 Systems are identical products.

The preface includes the following sections:

- Audience
- Related Documentation
- Text Conventions
- Notes on Safety
- Syntax of the Command-Line Interface (CLI)
- Document Feedback

Audience

This document is intended for service engineers and field engineers who perform maintenance work on the system.

Related Documentation

All documents for your server are available online at the following locations.

- Sun Oracle software-related documents (Oracle Solaris, etc.)
  http://www.oracle.com/documentation/
- Fujitsu documents
  Japanese site

  http://jp.fujitsu.com/platform/server/sparc/manual/

  Global site

  http://www.fujitsu.com/global/services/computing/server/sparc/downloads/manual/

The following table lists documents related to SPARC M10 Systems.

Documentation Related to SPARC M10 Systems (*1)
Fujitsu M10/SPARC M10 Systems Getting Started Guide (*2)
Fujitsu M10/SPARC M10 Systems Quick Guide
Fujitsu M10/SPARC M10 Systems Important Legal and Safety Information (*2)
Software License Conditions for Fujitsu M10/SPARC M10 Systems
Fujitsu M10/SPARC M10 Systems Safety and Compliance Guide
Fujitsu M10/SPARC M10 Systems Security Guide
Fujitsu M10/SPARC M10 Systems/SPARC Enterprise/PRIMEQUEST Common Installation Planning Manual
Fujitsu M10/SPARC M10 Systems Installation Guide
Fujitsu M10-1/SPARC M10-1 Service Manual
Fujitsu M10-4/Fujitsu M10-4S/SPARC M10-4/SPARC M10-4S Service Manual
PCI Expansion Unit for Fujitsu M10/SPARC M10 Systems Service Manual
Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide
Fujitsu M10/SPARC M10 Systems Domain Configuration Guide
Fujitsu M10/SPARC M10 Systems XSCF Reference Manual
Fujitsu M10/SPARC M10 Systems Product Notes
Fujitsu M10/SPARC M10 Systems Glossary

*1 The listed manuals are subject to change without notice.
*2 Printed manuals are provided with the product.

Text Conventions

This manual uses the following fonts and symbols to express specific types of information.

Font/Symbol	Meaning	Example
AaBbCc123	What you type, when contrasted with on-screen computer output. This font indicates an example of command input.	XSCF> **adduser jsmith**
AaBbCc123	The names of commands, files, and directories; on-screen computer output. This font indicates an example of command input in the frame.	XSCF> **showuser -P** User Name: jsmith Privileges: useradm auditadm
Italic	Indicates the name of a reference manual.	See the *Fujitsu M10/SPARC M10 Systems Installation Guide*.
" "	Indicates the names of chapters, sections, items, buttons, or menus.	See "Chapter 2 Network Connection."

Command syntax in the text

While the XSCF commands have a section number of (8) or (1), it is omitted from the text.
The Oracle Solaris commands have a section number such as (1M) in the text.
Each command has a section number in a command name to prompt users to refer to it.

Notes on Safety

Read the following documents thoroughly before using or handling any SPARC M10 Systems.

- *Fujitsu M10/SPARC M10 Systems Important Legal and Safety Information*
- *Fujitsu M10/SPARC M10 Systems Safety and Compliance Guide*

Syntax of the Command-Line Interface (CLI)

The command syntax is as follows:

- A variable that requires the input of a value must be put in Italics.
- An optional element must be enclosed in [].
- A group of options for an optional keyword must be enclosed in [] and delimited by |.

Document Feedback

If you have any comments or requests regarding this document, please take a moment to share it with us by indicating the manual code, manual title, and page, and stating your points specifically through the following websites:

- Japanese site
  http://jp.fujitsu.com/platform/server/sparc/manual/
- Global site
  http://www.fujitsu.com/global/services/computing/server/sparc/downloads/manual/

Chapter 1

Before Starting Maintenance Work

This chapter describes the safety precautions that must be observed before starting any maintenance work.
Note the meanings of each of the following symbols and labels to ensure that the work is done correctly.

- Warning/Caution Indications
- Warning Labels
- Labels/Tags
- Safety Precautions
- Notes Regarding Static Electricity
- Other Precautions
- Emergency Power Off

1.1 Warning/Caution Indications

This manual uses the following conventions to indicate warning and alert messages, which are intended to prevent injury to the user and others as well as damage to property.

Warning - "WARNING" indicates a potential hazard that could result in death or serious personal injury if the user does not perform the procedure correctly.

Caution - "CAUTION" indicates a potential hazard that could result in minor or moderate personal injury if the user does not perform the procedure correctly. This also indicates that damage to the unit or other property may occur if the user does not perform the procedure correctly.

1.2 Warning Labels

Observe the warning labels (A in the figure) affixed on the SPARC M10-4/M10-4S and the crossbar box during the maintenance work. The warning label on the crossbar box also describes certification standards.

Caution - Never peel off the labels.

Figure 1-1 Location of warning labels (SPARC M10-4/M10-4S)

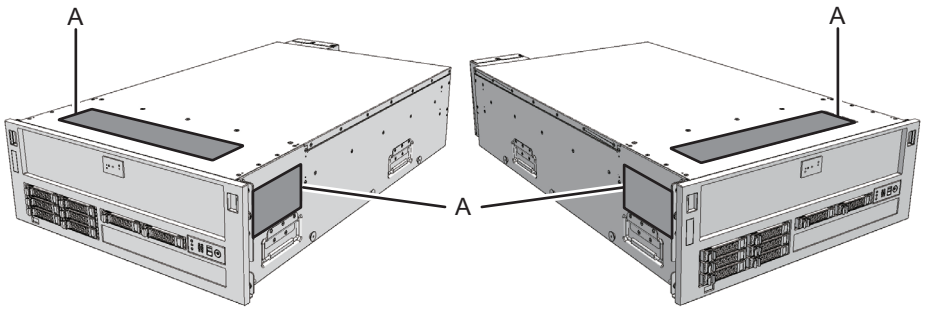
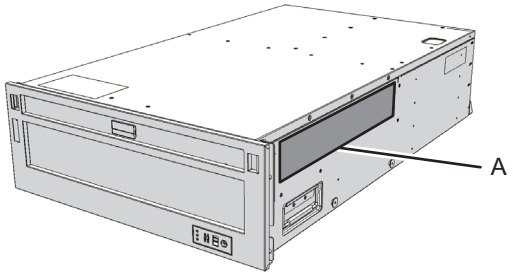


Figure 1-2 Location of warning labels (crossbar box)



1.3 Labels/Tags

This section explains labels and tags that are affixed on the SPARC M10-4/M10-4S and the crossbar box.

Note - The contents of the labels and tags may differ from those that are actually affixed.

- The system name plate label (A in the figure) describes the model number, serial number, and version required for maintenance and management.
- The standard label (B in the figure) describes the following certification standards. The warning label on the crossbar box describes certification standards.

  SPARC M10-4/M10-4S

  - Safety: NRTL/C
  - Radio wave: VCCI-A, FCC-A, DOC-A, KCC, and C-Tick
  - Safety and radio wave: CE, BSMI, and GOST-R

  Crossbar box

  - Safety: NRTL/C
  - Radio wave: VCCI-A, FCC-A, DOC-A, KCC, and C-Tick
  - Safety and radio wave: CE and CU

Figure 1-3 Location of the system name plate label and standard label (SPARC M10-4/M10-4S)

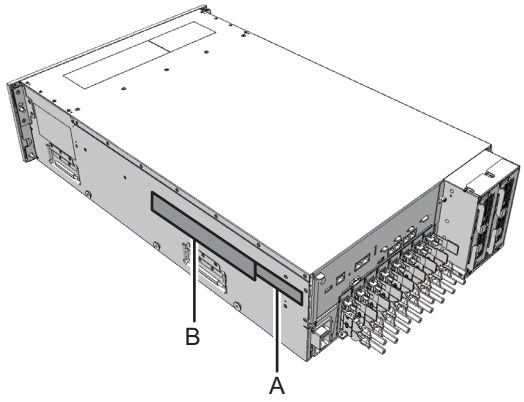
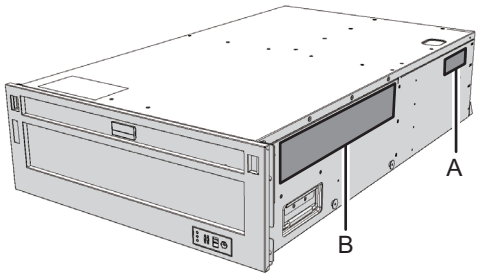


Figure 1-4 Location of the system name plate label and warning label (crossbar box)



- The RFID tag carries an Asset ID. The RFID tag of the SPARC M10-4/M10-4S is affixed on the front cover.

Figure 1-5 RFID tag (SPARC M10-4/M10-4S)

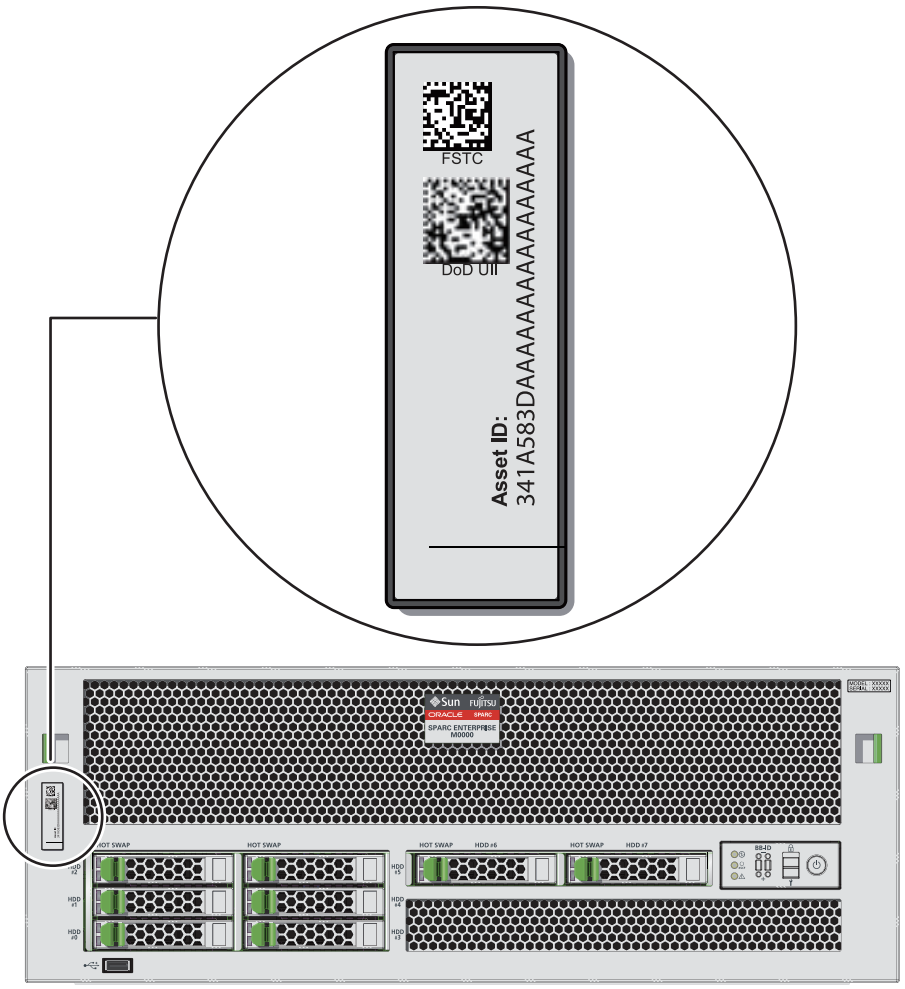
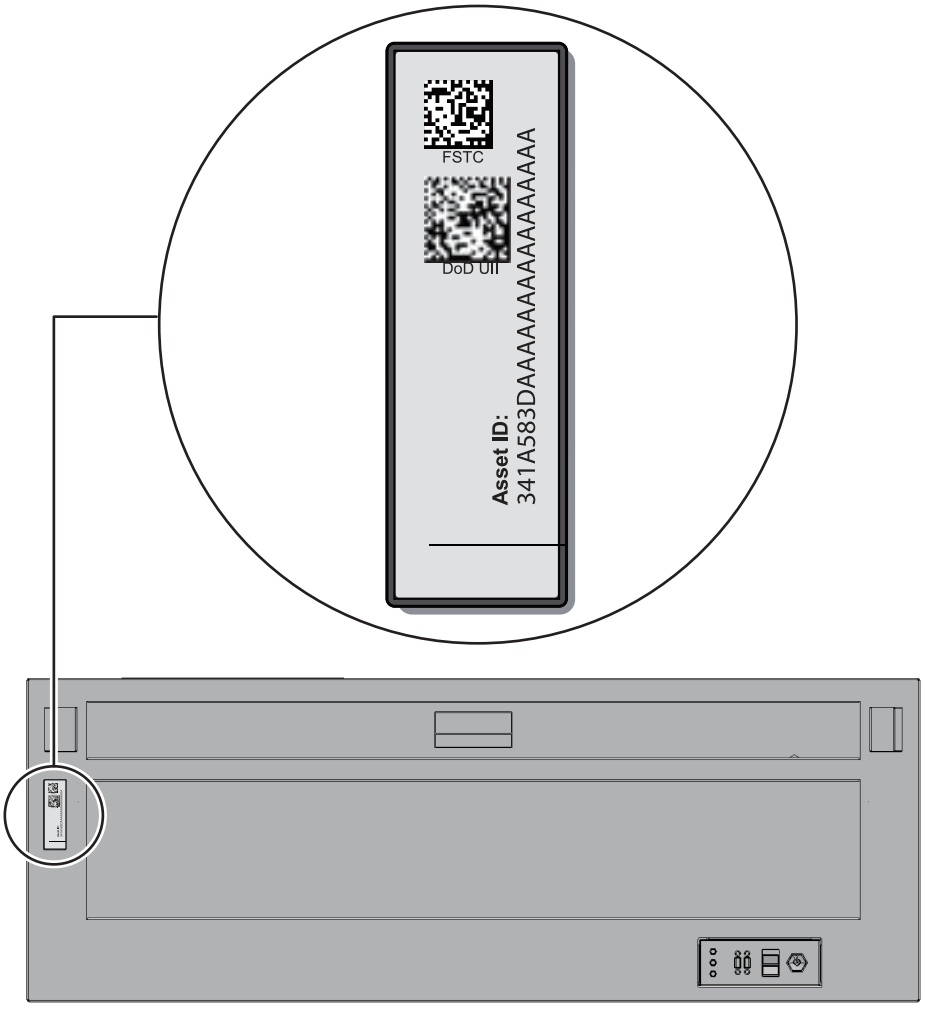


Figure 1-6 RFID tag (crossbar box)



1.4 Safety Precautions

Observe the following precautions to protect yourself when performing maintenance.

- Observe all the precautions, warnings, and instructions described on the chassis.
- Do not insert foreign objects into the openings in the chassis. Any such foreign object could come into contact with high-voltage circuitry or could short circuit the components, causing a fire or an electric shock.
- Contact a service engineer to inspect the chassis.

Safety precautions on electricity

- Confirm that the voltage and frequency of your input power supply match those shown on the electric rating label affixed on the chassis.
- Wear a wrist strap when handling a hard disk drive, CPU memory unit, or other printed boards.
- Use grounded power outlets.
- Do not attempt to make any mechanical or electrical modifications. Fujitsu shall not be responsible for the regulatory compliance of a chassis that has been modified.

Safety precautions on the racks

- The racks should be fixed on the floor, ceiling, or the adjacent frame.
- The racks may be supplied with a quakeresistant options kit. The use of the quakeresistant options kit prevents the racks from falling over during installation or maintenance service on the chassis.
- Prior to installation or maintenance, a safety assessment should be conducted by a service engineer in the following cases:
  - When the quakeresistant options kit is not supplied and the rack is not fixed on the floor with bolts: Check for the safety such as whether the rack should not fall over.
- If multiple chassis are mounted in a rack, perform maintenance for each of the chassis.

For details of the racks, see "Chapter 2 Planning and Preparing for System Installation" in the *Fujitsu M10/SPARC M10 Systems Installation Guide*.

1.5 Notes Regarding Static Electricity

Observe the precautions concerning the electrostatic discharge (ESD) as described in Table 1-1 to ensure the safety of personnel and the system.

Table 1-1 ESD precautions

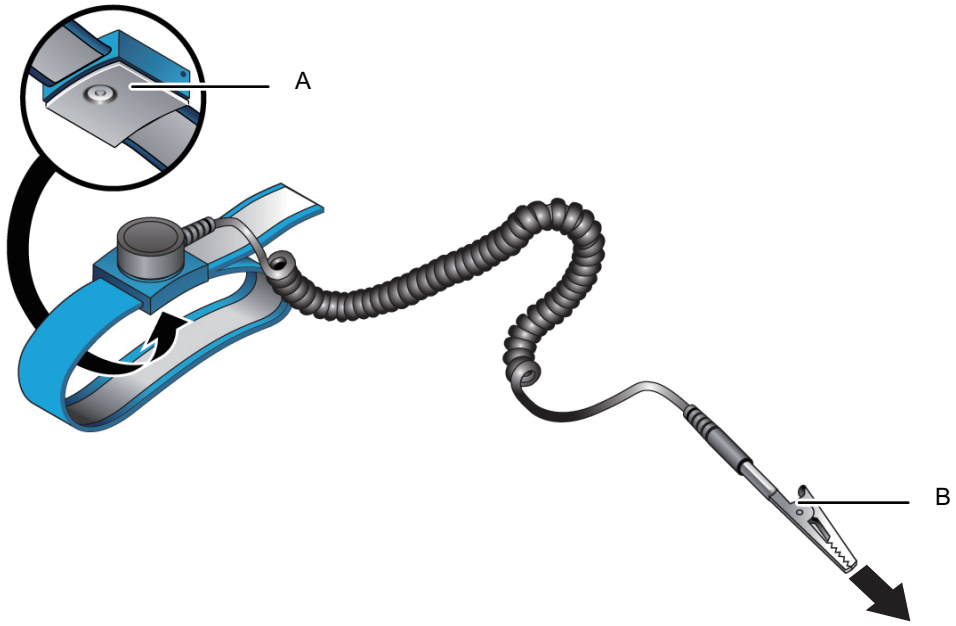
Item	Precaution
Wrist strap	Wear an antistatic wrist strap when handling printed boards.
ESD mat	An approved ESD mat provides protection from static damage when used with a wrist strap. The mat also acts as a cushion to protect the small parts that are attached to printed boards.
Antistatic bag/ ESD safe packaging box	After removing a printed board or component, place it in the antistatic bag or ESD safe packaging box.

How to use a wrist strap

Wear a wrist strap in such a way that the inner metal surface (A in the figure) of the wrist strap band is in contact with your skin. Connect the clip (B in the figure) directly to the chassis.

Caution - Do not connect the wrist strap clip to the ESD mat. By connecting the wrist strap clip to the chassis, the operator and components have the same level of potential, thus eliminating the danger of static damage.

Figure 1-7 Wrist strap connection destination



1.6 Other Precautions

- Printed boards in the chassis can be easily damaged by static electricity. To prevent damage to printed boards, wear a wrist strap and ground it to the chassis prior to starting maintenance.
- When mounting any component in the chassis, check the connectors on both of the chassis and component beforehand to confirm that none of the pins are bent and that all the pins are neatly arranged in lines. If a component is mounted with a bent pin in a connector, the chassis or component may be damaged. Also, carefully proceed with the work to prevent any pin from being bent.

- If excessive force is applied to the CPU memory unit, the components mounted on printed boards may be damaged. When handling the CPU memory unit, observe the following precautions:
  - Hold the CPU memory unit by the metal frame.
  - When removing the CPU memory unit from the packaging, keep the CPU memory unit horizontal until you lay it on the cushioned ESD mat.
  - Connectors and components on the CPU memory unit have thin pins that bend easily. Therefore, do not place the CPU memory unit on a hard surface.
  - Be careful not to damage the small parts located on both sides of the CPU memory unit.
- The heat sinks can be damaged by incorrect handling. Do not touch the heat sinks with your hands or other objects while replacing or removing CPU memory units. If a heat sink is disconnected or broken, obtain a replacement CPU memory unit. When storing or carrying a CPU memory unit, ensure that the heat sinks are sufficiently protected.
- When removing a cable such as the LAN cable, if you cannot reach the latch lock of the connector, use a flat headed screwdriver etc. to push the latch and release the cable. If you use force to remove the cable, the LAN port of the CPU memory unit or the PCI Express (PCIe) cards may be damaged.
- Do not use any power cord other than the specified one.

1.7 Emergency Power Off

This section explains the procedure for powering off the system in an emergency.

Caution - In an emergency (such as smoke or flames coming from the chassis), immediately stop using the unit and turn off the power supply. Regardless of the operation you are performing, give top priority to fire prevention.

1. **Remove all the power cords from the power supply unit.**

Figure 1-8 Removing the power cord (SPARC M10-4/M10-4S)

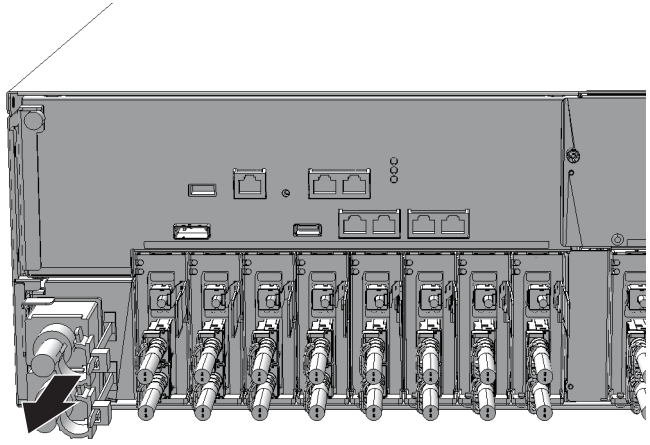
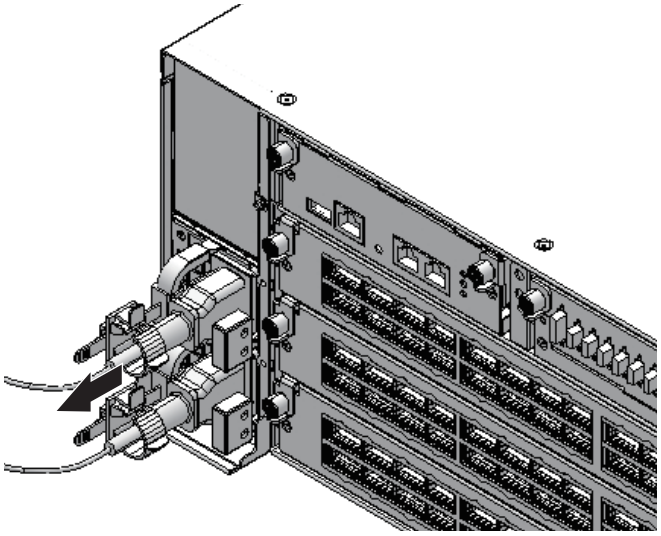


Figure 1-9 Removing the power cord (crossbar box)



Chapter 2

Understanding the System Components

This chapter describes the components mounted in the SPARC M10-4/M10-4S and the crossbar box.
It is necessary to confirm and fully understand the configurations of the components mounted in the chassis as well as the LED indications before starting any maintenance work.

- Identifying the Names and Locations of Components
- Confirming the Functions of the Operation Panel
- Checking the LED Indications
- Confirming the Types of Cable

For the specifications of each component, see "Appendix B Component Specifications."

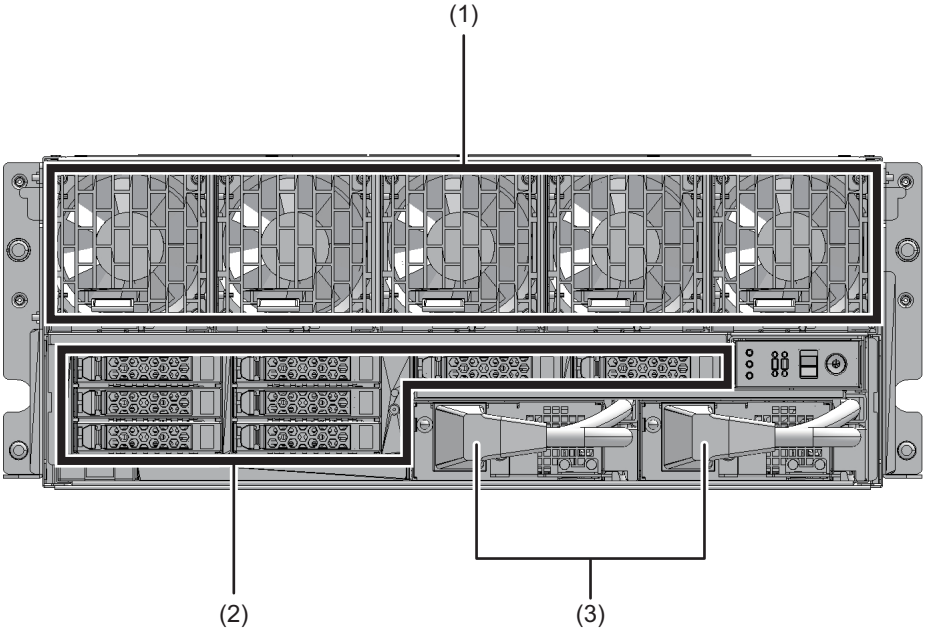
2.1 Identifying the Names and Locations of Components

This section describes the names and locations of the components mounted in the SPARC M10-4/M10-4S and the crossbar box.

Components that can be accessed from the front

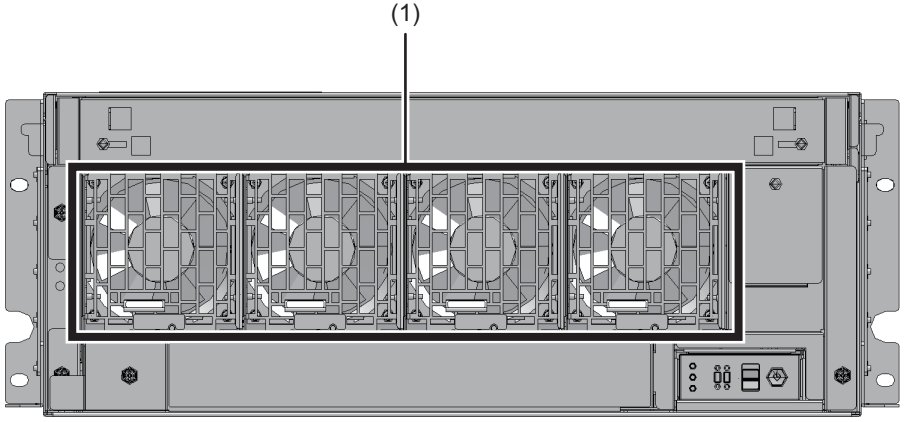
You can access the fan unit and power supply unit only after removing the front cover.

Figure 2-1 Locations of components that can be accessed from the front (SPARC M10-4/M10-4S)



Location number	Component
1	Fan unit
2	Internal disk
3	Power supply unit

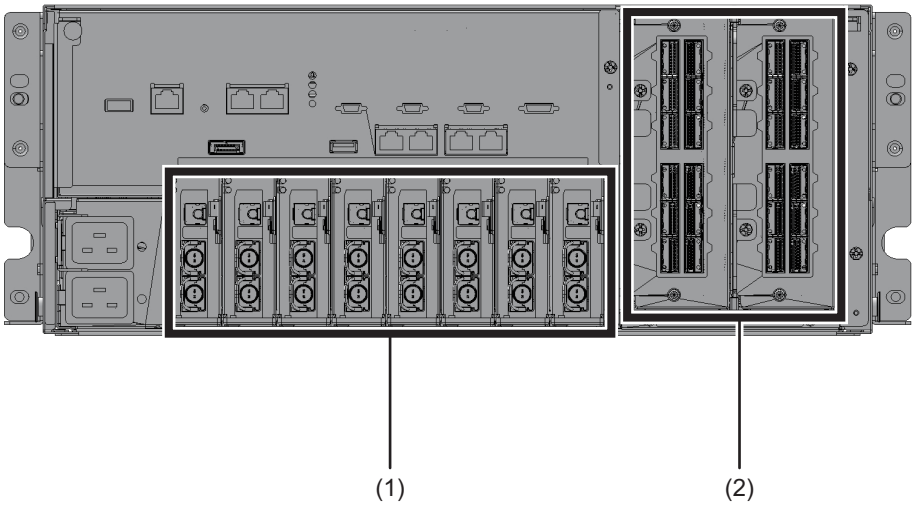
Figure 2-2 Location of a component that can be accessed from the front (crossbar box)



Location number	Component
1	Fan unit

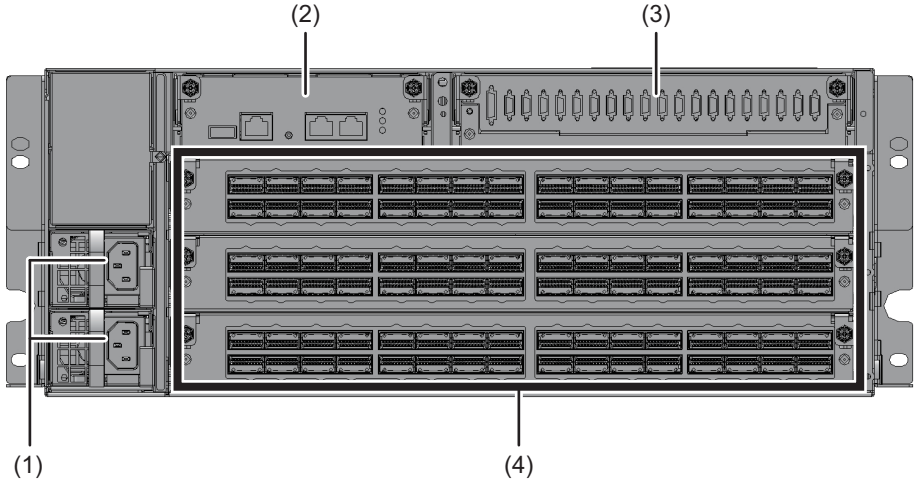
Components that can be accessed from the rear

Figure 2-3 Locations of components that can be accessed from the rear (SPARC M10-4/M10-4S)



Location number	Component
1	PCI-Express (PCIe) card cassette
2	Crossbar unit (Only for the SPARC M10-4S. The SPARC M10-4 incorporates three PCIe card cassettes.)

Figure 2-4 Locations of components that can be accessed from the rear (crossbar box)

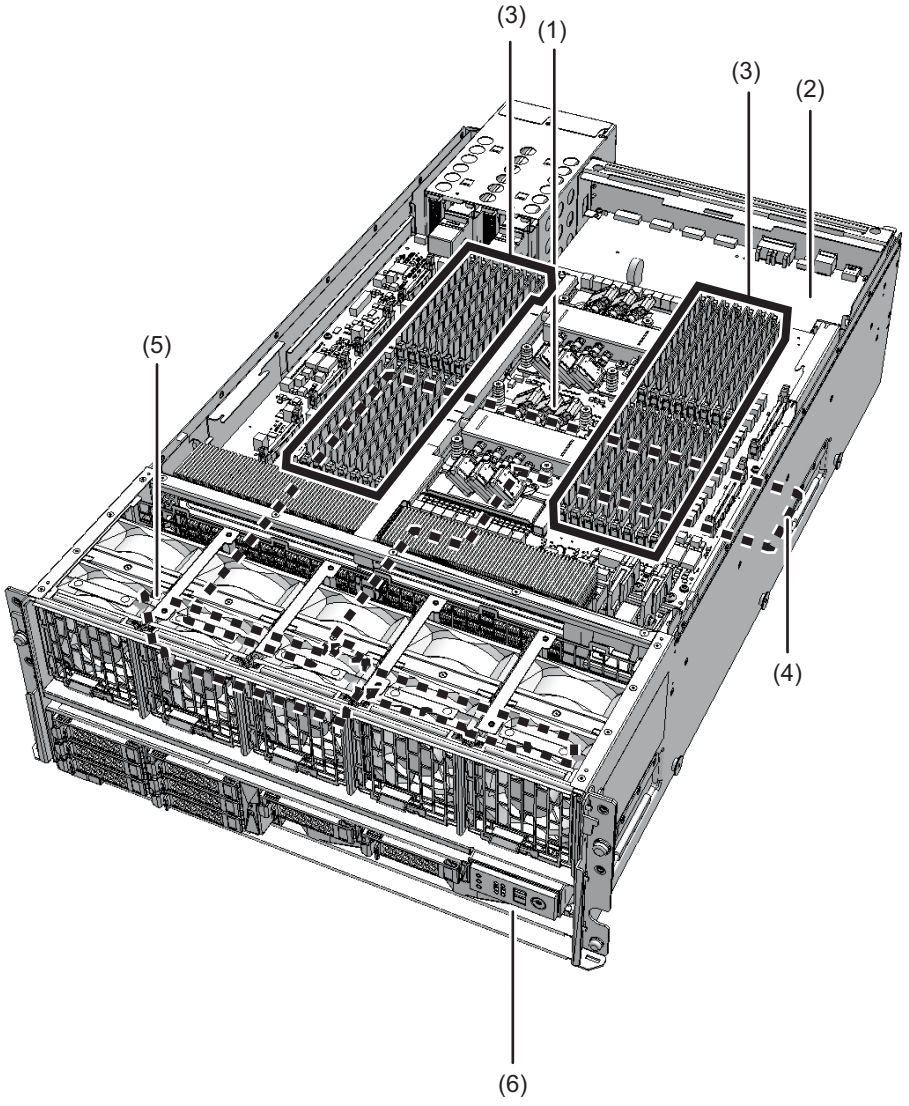


Location number	Component
1	Power supply unit
2	XSCF unit
3	XSCF interface unit
4	Crossbar unit

Internal components

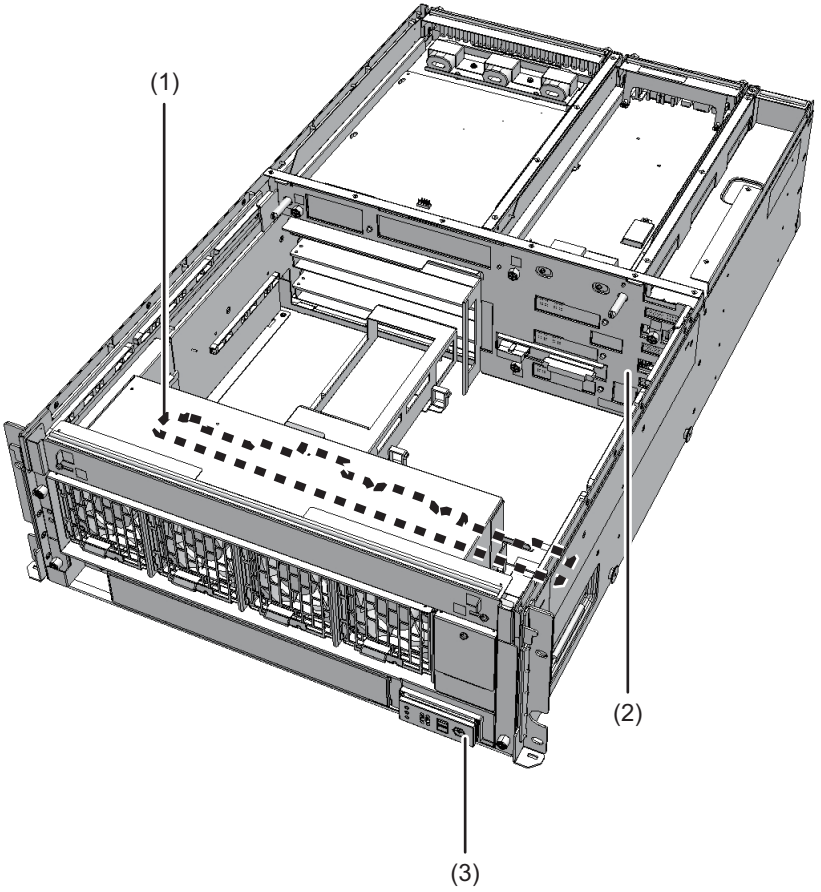
To access the internal components, remove the CPU memory unit from the SPARC M10-4/M10-4S, and the fan shelf from the crossbar box.

Figure 2-5 Locations of internal components (SPARC M10-4/M10-4S)



Location number	Component
1	CPU memory unit upper
2	CPU memory unit lower
3	Memory
4	PSU backplane unit
5	HDD backplane
6	Operation panel

Figure 2-6 Locations of internal components (crossbar box)



Location number	Component
1	Fan backplane
2	Crossbar backplane unit
3	Operation panel

2.2 Confirming the Functions of the Operation Panel

This section describes the functions of the operation panels of the SPARC M10-4/M10-4S and the crossbar box.

The operation panel provides the system's display and control functions. A field engineer and the system administrator can specify the operation mode or control the starting/stopping of the system while checking the system operation status by referring to the LED indications.

Figure 2-7 Location of the operation panel (SPARC M10-4/M10-4S)

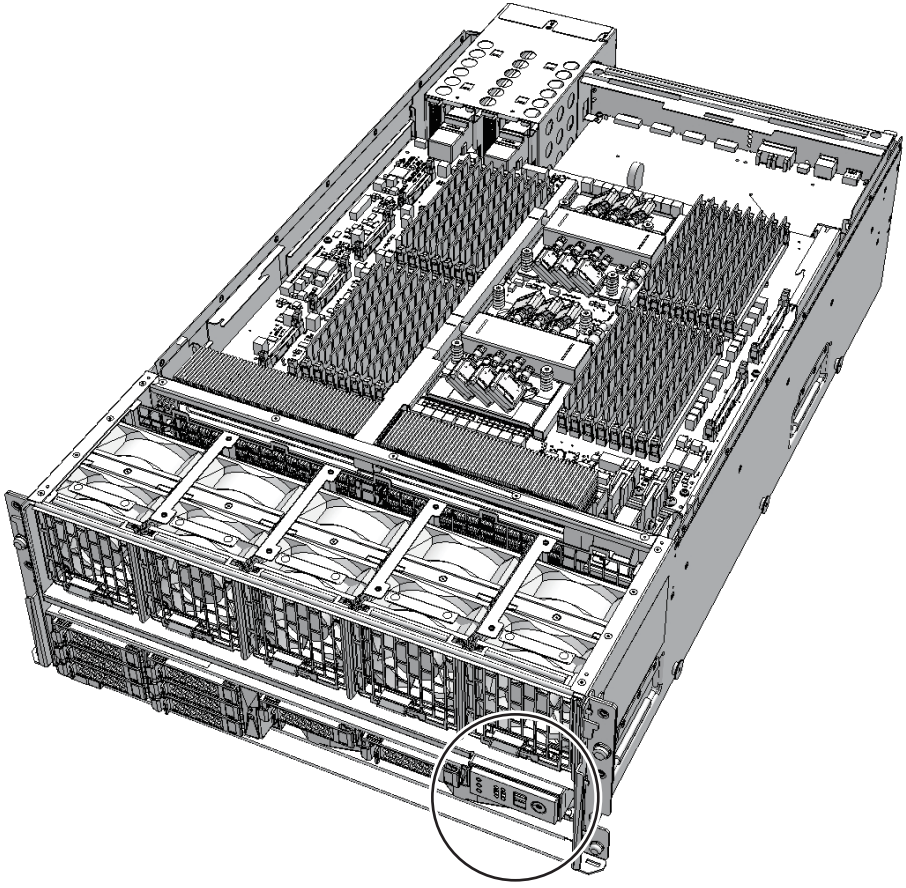


Figure 2-8 Location of the operation panel (crossbar box)

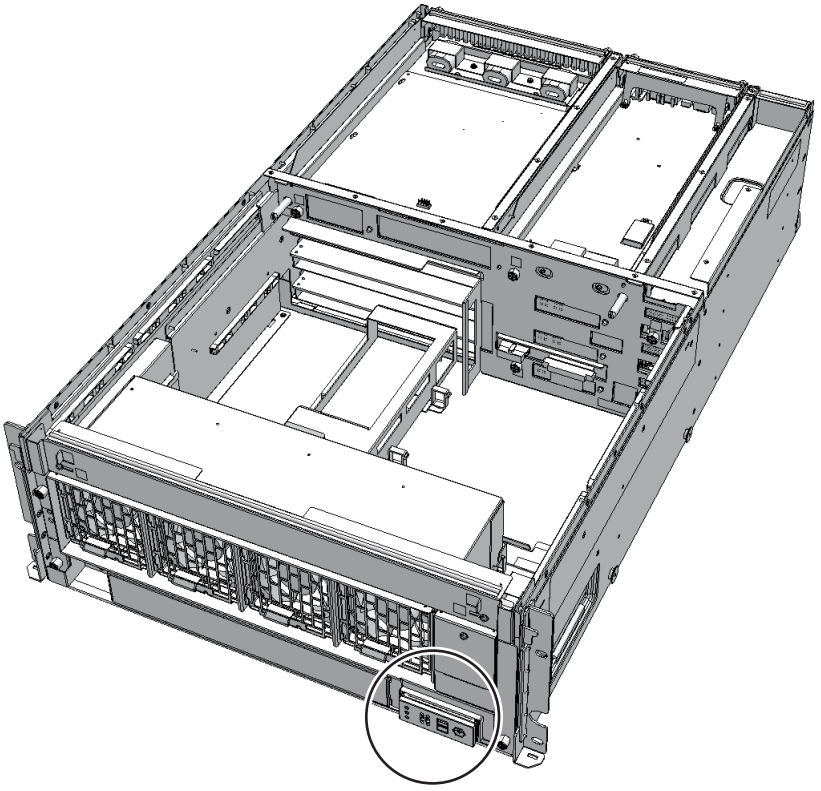
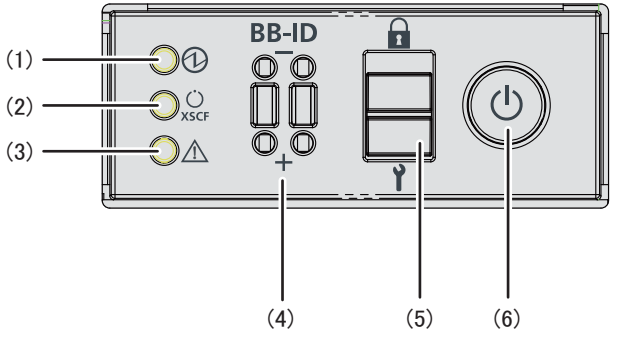


Figure 2-9 Appearance of operation panel (SPARC M10-4/M10-4S and crossbar box)



Location number	Component
1	POWER LED
2	XSCF STANDBY LED

Location number	Component
3	CHECK LED
4	ID switch (SPARC M10-4S and crossbar box only)
5	Mode switch
6	Power switch

For a building block configuration, an operation panel is mounted in each chassis of the SPARC M10-4S or the crossbar box. However, the only operation panel on which all of the LEDs and switches are enabled is that of the chassis housing the master XSCF.
Table 2-1 shows the display and operation status of the operation panel.

Table 2-1 Display and operation status of operation panel

LEDs/switches on operation panel	If the SPARC M10-4S or the crossbar box is acting as the master XSCF	If the SPARC M10-4S or the crossbar box is acting as an XSCF other than the master XSCF
POWER LED	Enabled (Displays the start or stop status of the SPARC M10-4S or the crossbar box)	Enabled (Displays the start or stop status of the SPARC M10-4S or the crossbar box)
XSCF STANDBY LED	Enabled (Displays the XSCF status of the system)	Enabled (Displays the XSCF status of the SPARC M10-4S or the crossbar box)
CHECK LED	Enabled (Displays an abnormal status of the SPARC M10-4S or the crossbar box)	Enabled (Displays an abnormal status of the SPARC M10-4S or the crossbar box)
ID switch	Enabled (Registration of ID number)	Enabled (Registration of ID number)
Mode switch (*)	Enabled (Mode operation of the system)	Disabled
Power switch	Enabled (Start/stop operation of the system)	Disabled

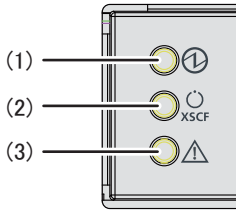
*: Set the same mode for the SPARC M10-4S systems and crossbar boxes with the master XSCF and XCCF in the standby state. If the settings are different, an asterisk (*) is displayed beside the components in the output of the showhardconf or showstatus command.

2.2.1 Display function of the operation panel

The operation panel has three LED indicators to implement its display function. The LED indicators indicate the following. For details, see "2.3.1 Operation panel LEDs."

- General system status
- System error warning
- System error location

Figure 2-10 LEDs on operation panel (SPARC M10-4/M10-4S and crossbar box)



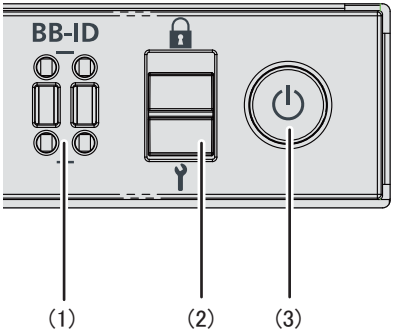
Location number	Component
1	POWER LED
2	XSCF STANDBY LED
3	CHECK LED

2.2.2 Control function of the operation panel

The operation panel has the following switches to implement its control function:

- ID switch
  Identifies the SPARC M10-4S and the crossbar box.
- Mode switch (slide switch)
  Specifies the operation mode.
- Power switch
  Controls start/stop of the system.

Figure 2-11 Operation panel switches



Location number	Component
1	ID switch (SPARC M10-4S and crossbar box only)
2	Mode switch

Location number	Component
3	Power switch

Use the ID switch to set the ID number of the SPARC M10-4S or the crossbar box. Set #0 to #15 for the SPARC M10-4S and #80 to #83 for the crossbar box. Table 2-2 describes how to operate the ID switch.

Table 2-2 How to operate the ID switch

Operation	Description
Pressing the + side.	The ID number increases by 1.
Pressing the - side	The ID number decreases by 1.

Use the mode switch to set the operation mode for the system. The Locked and Service operation modes can be switched by sliding the mode switch.
Table 2-3 describes the difference between the modes.

Table 2-3 Functions of the mode switch

Icon	Name	Description
	Locked mode	This mode is used for normal operation. - The power switch can be used to start the system but not to stop it.
	Service mode	This mode is used for maintenance. - The power switch cannot be used to start the system but can be used to stop it. - Place the system in Service mode to perform maintenance work with the system stopped.

Use the power switch to start or stop the system. The system starts/stops differently depending on how the power switch is pressed.
Table 2-4 describes how system start/stop varies depending on how the power switch is pressed.

Table 2-4 Functions of the power switch

Icon	Operation	Description	
	Brief press (For 1 second or more and less than 4 seconds)	If the system has been started in Service mode (*):	Operation is ignored.
		If the system is stopped in Service mode:	Operation is ignored.
		If the system has been started in Locked mode (*):	Operation is ignored.
		If the system is stopped in Locked mode:	Starts the system. At this time, if a wait time for the air conditioning facilities or a warm-up time is set on the XSCF, the processing for waiting for the power-on of the air conditioning facilities and the completion of warm-up is omitted.
	Long press (For 4 seconds or more)	If the system has been started in Service mode (*):	Perform the system shutdown process to stop the system.
		If the system startup process is in progress in Service mode:	Cancels the system startup process and then stops the system.
		If the system stop process is in progress in Service mode:	Continues the system stop process.
		If the system is stopped in Service mode:	Operation is ignored. Even a long press does not start the system.
		If the system is stopped in Locked mode:	Starts the system. If a wait time for the air conditioning facilities or a warm-up time is set on the XSCF, the processing for waiting for the power-on of the air conditioning facilities and the completion of warm-up is omitted.
		If the system is not stopped in Locked mode:	Operation is ignored.

*: If the system has been started, it means that at least one physical partition has been powered on.

Table 2-5 describes the functions of the mode switch.

Table 2-5 Functions of the mode switch

Function	Mode switch	
	Locked	Service
Starting/Stopping the system by the power switch	Only system startup is enabled.	A long press shuts down the system.

Table 2-5 Functions of the mode switch *(continued)*

Function	Mode switch	
	Locked	Service
Inhibition of break signal reception	Enabled. Using the setpparmode command, it is possible to specify whether break signal reception is allowed or inhibited for each physical partition.	Disabled

2.3 Checking the LED Indications

This section describes the statuses of the LEDs mounted on the SPARC M10-4/M10-4S and the crossbar box.
LEDs are mounted on the operation panel on the front of the chassis, on the rear panel of the chassis, and on each component that can be maintained. If an error occurs, the LED indication enables you to determine which system requires maintenance.

2.3.1 Operation panel LEDs

The three LEDs on the operation panel indicate the operation status of the overall system. In addition, the LEDs enable you to check the system status by their combination of being on, blinking, or off.
Table 2-6 lists the system operation status indicated by the LEDs, while Table 2-7 lists the system status indicated by the combination of LEDs.

Table 2-6 System operation status indicated by LEDs

Icon	Name	Color	Description
	POWER	Green	Indicates the startup or stop status of the system for each chassis. • On: System is started. • Off: System is stopped. • Blinking (*): System stop process is in progress.
XSCF	XSCF STANDBY	Green	Indicates the status of the XSCF for the entire system or for each chassis. • On: XSCF is functioning normally. • Off: XSCF is stopped. • Blinking (*): System is being initialized after power-on.

Table 2-6 System operation status indicated by LEDs *(continued)*

Icon	Name	Color	Description
⚠	CHECK	Amber	Indicates the system operation status for each chassis. ● On: An error that prevents startup was detected. ● Off: Normal, or the power is disconnected or not being supplied. ● Blinking (*): Indicates that the chassis requires maintenance (this function is also referred to as the "locator").

* The blink interval is 1 second (1 Hz).

Table 2-7 System status indicated by combination of LEDs

LED state			Description
POWER	XSCF STANDBY	CHECK	
⏻	↻ XSCF	⚠	
Off	Off	Off	Power is disconnected.
Off	Off	On	Power has just been turned on.
Off	Blinking (*)	Off	The XSCF is being initialized.
Off	Off	On	The XSCF has detected an error.
Off	On	Off	The XSCF is in the standby state. The system is waiting for power-on of the air conditioning facilities (in the data center).
On	On	Off	Warm-up standby processing is in progress. After the end of this processing, the system starts up. System startup processing is in progress. The system is operating.
Blinking (*)	On	Off	System stop processing is in progress. After the end of processing, the fan unit stops.

* The blink interval is 1 second (1 Hz).

2.3.2 LEDs on the rear panel (System locator)

The field engineer or system administrator can identify the chassis requiring maintenance by using the CHECK LED (A in the figure) on the rear panel. The CHECK LED on the rear panel is referred to as the system locator, and has the same function as the CHECK LED on the operation panel.

Figure 2-12 Location of system locator (SPARC M10-4/M10-4S)

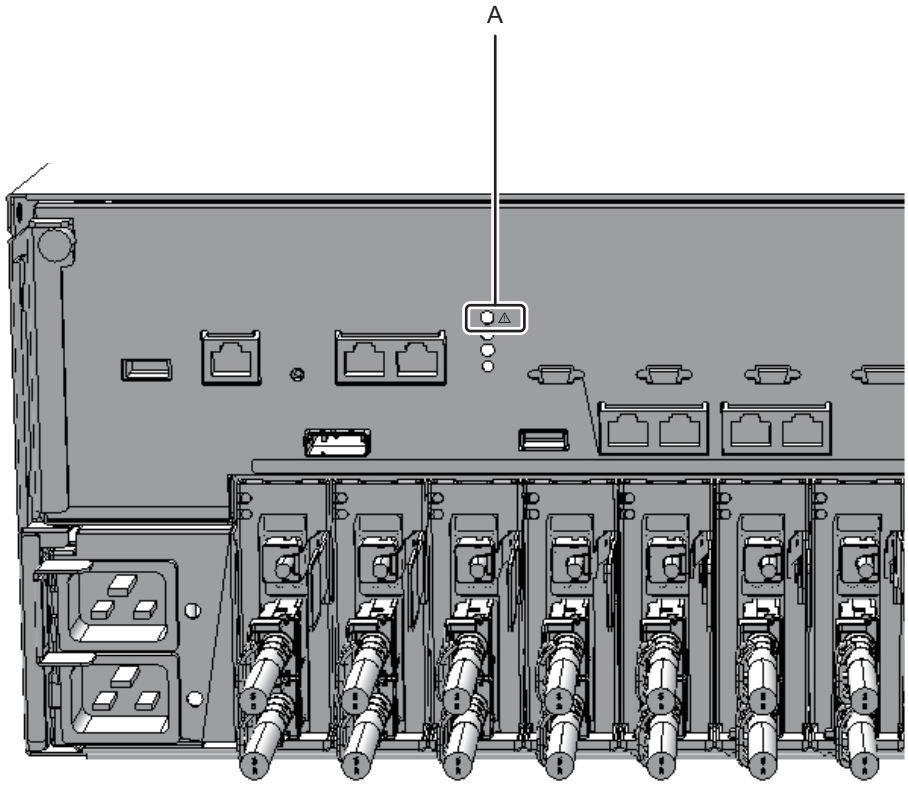


Figure 2-13 Location of system locator (crossbar box)

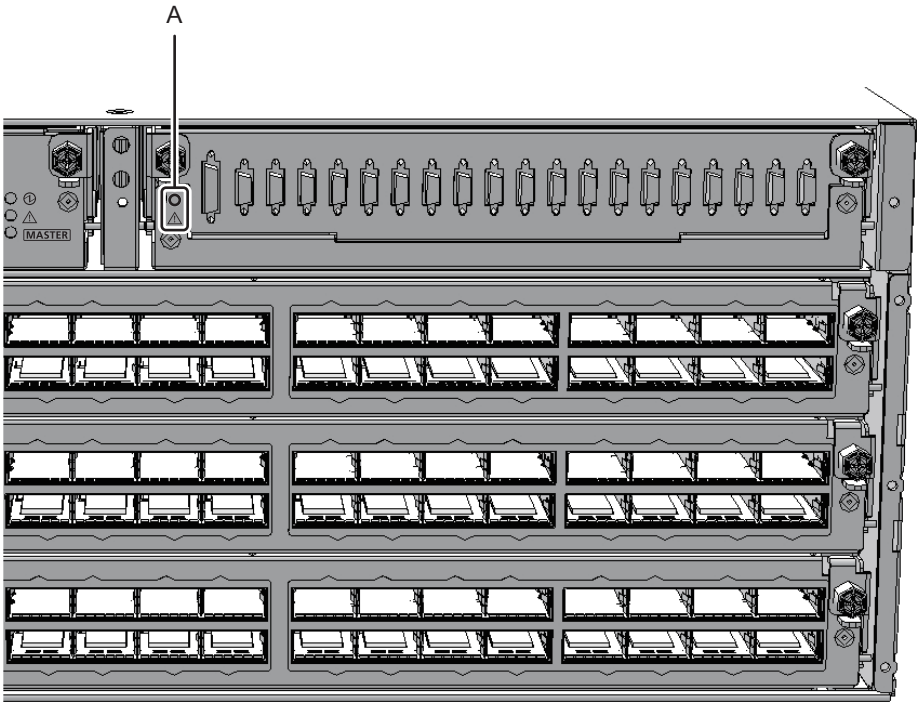


Table 2-8 Status of the system locator

Icon	Name	Color	Description
⚠	CHECK	Amber	Indicates the system operation status for each chassis. • On: An error that prevents startup was detected. • Off: Normal, or the power is disconnected or not being supplied. • Blinking (*): Indicates that the chassis requires maintenance (this function is also referred to as the "locator").

* The blink interval is 1 second (1 Hz).

2.3.3 LEDs on each component

Each component of the SPARC M10-4/M10-4S and the crossbar box has an LED mounted. These LEDs light to indicate that a component requires maintenance if that component experiences a fault. Start maintenance work after checking the LED status.

The LEDs on each component and their statuses are as follows:

Table 2-9 LEDs on the XSCF or XSCF unit and their statuses (SPARC M10-4/M10-4S and crossbar box)

Name	Color	Status	Description
READY	Green	On	Indicates that the component is operating. The component cannot be released and removed from the system.
		Blinking (*)	Indicates that the component is currently being mounted on the system or being disconnected from the system.
		Off	Indicates that the component is disconnected from the system. Indicates that the component can be removed and replaced.
CHECK	Amber	On	Indicates that an error has occurred.
		Blinking (*)	Indicates that the component requires maintenance (This function is also referred to as the "locator").
		Off	Indicates the normal state.
MASTER	Green	On	Master chassis
		Off	Slave chassis

Table 2-10 LEDs on the XSCF-LAN port and their statuses (SPARC M10-4/M10-4S and crossbar box)

Name	Color	Status	Description
ACT	Green	On	Indicates that communication is being performed.
		Off	Indicates that communication is not being performed.
LINK SPEED	Amber	On	Indicates that the communication speed is 1 Gbps.
	Green	Blinking (*)	Indicates that the communication speed is 100 Mbps.
		Off	Indicates that the communication speed is 10 Mbps.

* The blink interval is 1 second (1 Hz).

Table 2-11 LED on the fan unit and its status (SPARC M10-4/M10-4S and crossbar box)

Name	Color	Status	Description
CHECK	Amber	On	Indicates that an error has occurred.
		Blinking (*)	Indicates that the component requires maintenance (This function is also referred to as the "locator").
		Off	Indicates the normal state.

* The blink interval is 1 second (1 Hz).

Table 2-12 LED on the power supply unit and its status (SPARC M10-4/M10-4S and crossbar box)

Name	Color	Status	Description
CHECK	Green	On	Indicates that the input power is turned on and power is being supplied normally.
		Blinking (*)	Indicates that the input power is being disconnected.
	Amber	On	Indicates that an error has occurred. Indicates that the input power to this power supply unit is turned off in redundant operation.
		Blinking (*)	Indicates a warning (An error has occurred but this power supply unit is operating).
		Off	Indicates that power is not being supplied.

* The blink interval is 1 second (1 Hz).

Table 2-13 LEDs on the PCIe card slot and their statuses (SPARC M10-4/M10-4S)

Name	Color	Status	Description
POWER	Green	On	Indicates that power is being supplied.
		Off	Indicates that power is not being supplied.
ATTENTION	Amber	On	Indicates that an error has occurred.
		Blinking (*)	Indicates that the component requires maintenance (This function is also referred to as the "locator").
		Off	Indicates the normal state.

* The blink interval is 1 second (1 Hz).

Table 2-14 LEDs on the internal disk and their statuses (SPARC M10-4/M10-4S)

Name	Color	Status	Description
READY	Green	Blinking	Indicates that the disk is being accessed. This LED is normally on, but it blinks while the disk is being accessed. While the LED is blinking, maintenance work such as the removal of the disk cannot be performed.
		Off	Indicates that maintenance work such as the removal of the disk can be performed.
CHECK	Amber	On	Indicates that an error has occurred.
		Blinking (*)	Indicates that the component requires maintenance (This function is also referred to as the "locator").
		Off	Indicates the normal state.

* The blink interval is 1 second (1 Hz).

2.4 Confirming the Types of Cable

This section describes the types of the cables that are connected to the SPARC M10-4/M10-4S and the crossbar box, as well as the locations of the cable ports. The types and number of the cables to be used vary depending on the configuration.

2.4.1 Types of cable

In a building block configuration, the following cables are used for making a connection between the SPARC M10-4S systems and between the SPARC M10-4S and the crossbar box:

- Crossbar cable (electrical)
  This is used to connect the SPARC M10-4S systems in a building block configuration without the crossbar box.
- Crossbar cable (optical)
  This is used to connect the SPARC M10-4S with the crossbar box in a building block configuration with the crossbar box.
- XSCF BB control cable
  This is used to connect the XSCFs mounted in the SPARC M10-4S or crossbar box chassis.

  An XSCF mounted in a chassis becomes the master XSCF and monitors or controls the entire system. XSCFs other than the master XSCF act as slaves and monitor or control each chassis.
- XSCF DUAL control cable
  This is used to connect the master XSCF to a standby XSCF and duplicate XSCF.

  One of the slave XSCFs functions as the standby XSCF. If an abnormality occurs with the master XSCF, the standby XSCF becomes the master XSCF and continues the monitoring or control of the system.

Each table has a tag that is used for maintenance recording and management.

2.4.2 Cable connection ports

Figure 2-14 and Figure 2-15 show the locations of the cable connection ports of the SPARC M10-4S and the crossbar box, respectively. See the following chapters for the procedures for maintaining the cables:

- Chapter 24 Maintaining the Crossbar Cables (Electrical)
- Chapter 25 Maintaining the Crossbar Cables (Optical)
- Chapter 26 Maintaining the XSCF BB Control Cables
- Chapter 27 Maintaining the XSCF DUAL Control Cables

Figure 2-14 Locations of cable connection ports (SPARC M10-4S)

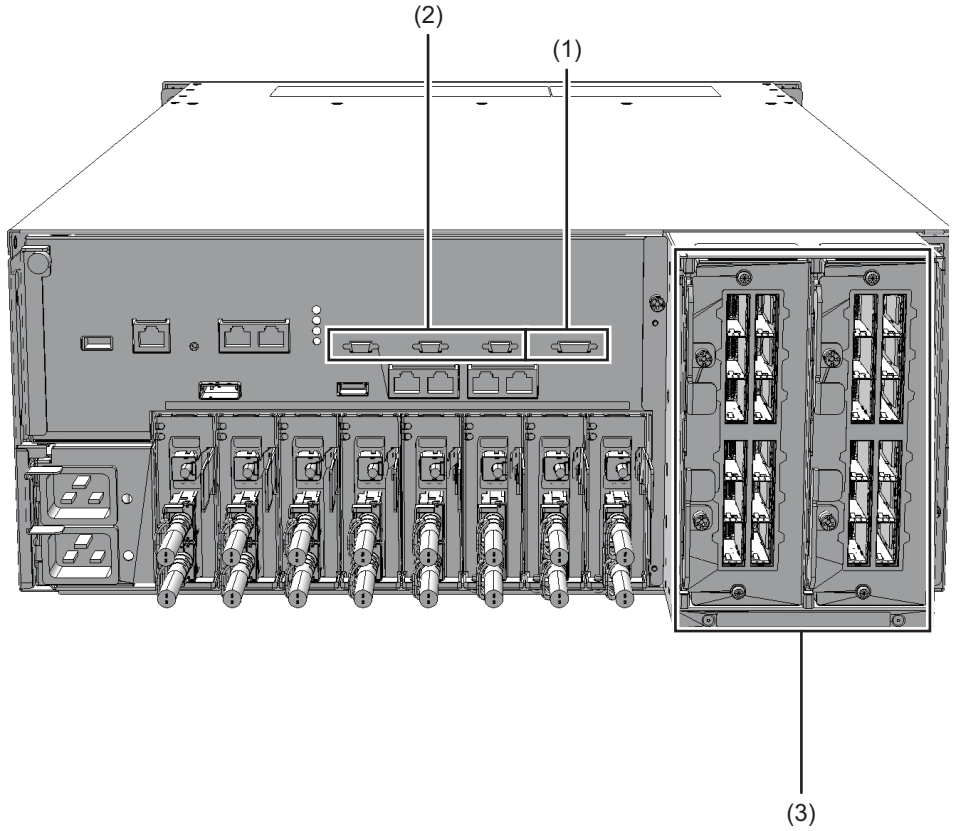
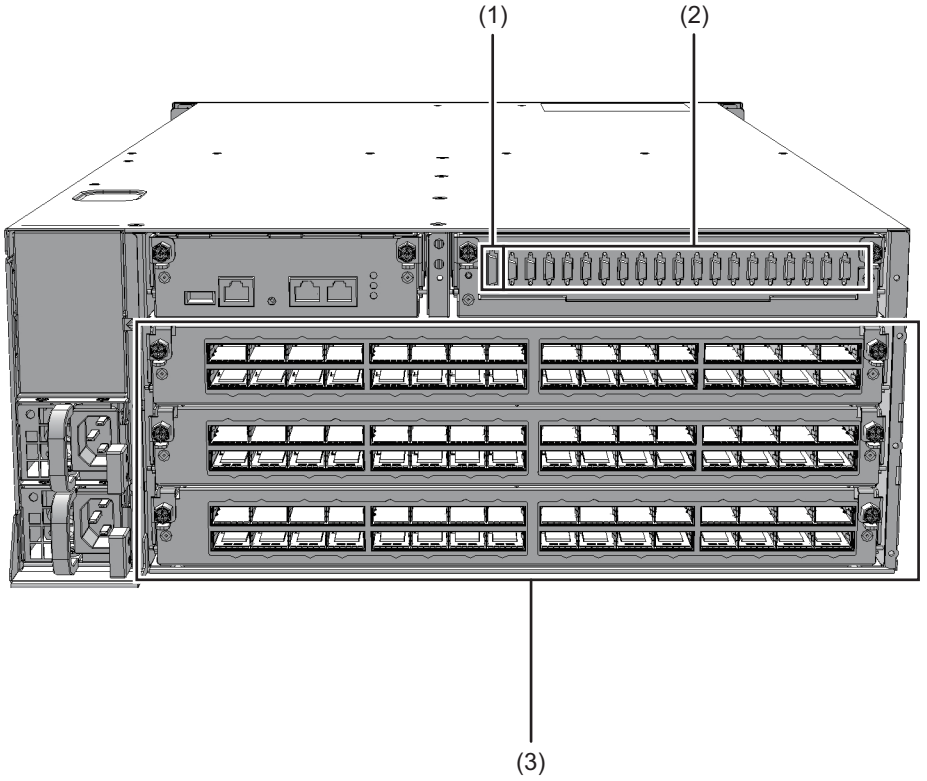


Figure 2-15 Locations of cable connection ports (crossbar box)



Location number	Connection port
1	XSCF DUAL control port
2	XSCF BB control port
3	Crossbar cable connection port

Chapter 3

Troubleshooting

This chapter describes how to determine and confirm the cause if an error occurs.

- Suspected Failure Conditions
- Determining the Causes of Individual Failures
- Identifying a Failure
- Downloading Error Log Information

3.1 Suspected Failure Conditions

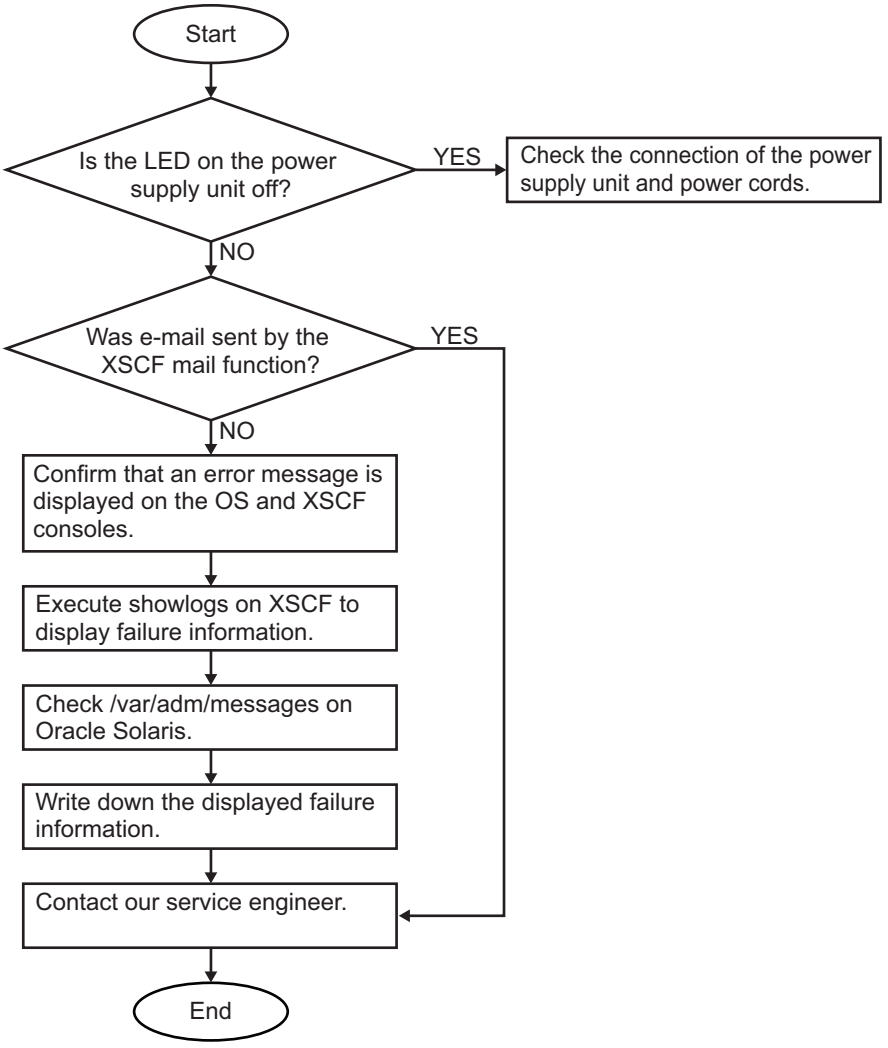
This section explains suspected failure conditions. Use the flow to determine the cause of a failure and identify the failure location in the following cases. For details on the flow for determining the cause of a failure, see "3.2 Determining the Causes of Individual Failures."

- When the CHECK LED is on
- When an error message is displayed on the console
- When an error is displayed as a result of executing a command for checking the status
- When an error is displayed in the error log

3.2 Determining the Causes of Individual Failures

This section explains the flow for determining the causes of failures. This flow is also applied to failures of the PCI expansion unit.

Figure 3-1 Troubleshooting flow



3.3 Identifying a Failure

This section explains the method for identifying a failure. Use the flow described in "3.2 Determining the Causes of Individual Failures" to determine the appropriate way of checking for a failure.

3.3.1 Checking the LED indications

Check the LEDs on the operation panel, rear panel, and on each component to identify which component requires maintenance. Check the status of a component from its LED before starting any maintenance work on that component.

- Operation panel LEDs
  You can check the status of the system by checking the LEDs on the operation panel. For details, see "2.3.1 Operation panel LEDs."
- LEDs on the rear panel
  You can check the status of the system by noting the CHECK LED on the rear panel of the chassis, which has the same function as the CHECK LED on the operation panel. For details, see "2.3.2 LEDs on the rear panel (System locator)."
- LED on each component
  You can determine the location of an error by checking the LED on the component that incorporates the failed hardware if an error occurs in the hardware within the chassis. For details, see "2.3.3 LEDs on each component."

  Note that some components such as memory are not provided with LEDs. To check the status of a component that does not have an LED, execute XSCF shell commands such as the showhardconf command from the maintenance terminal. For details, see "3.3.3 Checking the status of a component."

3.3.2 Checking error messages

Display error messages to check the log information and obtain an error overview. You can use either of the following two methods to check the error messages:

- Checking error log information using the XSCF shell
  For details, see "12.1 Checking a Log Saved by the XSCF" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.
- Checking messages on Oracle Solaris
  For details, see "12.2 Checking Warning and Notification Messages" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

3.3.3 Checking the status of a component

Execute the XSCF firmware commands to check the system hardware configuration and the status of each component.

showhardconf command

Execute the showhardconf command to check the information for a list of components.

1. **Log in to the XSCF shell.**
2. **Execute the showhardconf command to check the list of components.**
   A failed component is indicated by an asterisk (*) at the beginning of the line.

```
XSCF> showhardconf
SPARC M10-4S;
    + Serial:2081229003; Operator_Panel_Switch:Service;
    + System_Power:On; System_Phase:Cabinet Power On;
    Partition#0 PPAR_Status:Running;
    BB#00 Status:Normal; Role:Master; Ver:2050h; Serial:2081229003;
        + FRU-Part-Number:CA07361-D202 A0                          ;
        + Power_Supply_System: ;
        + Memory_Size:320 GB;
----------------------Ommitted-----------------------
        PCI#0 Status:Normal; Name_Property:pci;
            + Vendor-ID:108e; Device-ID:9020;
            + Subsystem_Vendor-ID:0000; Subsystem-ID:0000;
            + Model:;
            + Connection:7001;
*           PCIBOX#7001; Status:Faulted; Ver:1110h; Serial:2121237001;
                + FRU-Part-Number:;
                IOB Status:Normal; Serial:PP123403JE  ;
                    + FRU-Part-Number:CA20365-B66X 008AG    ;
                LINKBOARD Status:Normal; Serial:PP1234026P  ;
                    + FRU-Part-Number:CA20365-B60X 001AA    ;
                PCI#1 Name_Property:ethernet;
                    + Vendor-ID:1077; Device-ID:8000;
                    + Subsystem_Vendor-ID:1077; Subsystem-ID:017e;
                    + Model:;
----------------------Ommitted-----------------------
```

showstatus command

Execute the showstatus command to check the status of the components.

1. **Log in to the XSCF shell.**
2. **Execute the showstatus command to check the status.**
   A failed component is indicated by an asterisk (*) at the beginning of the line.

```
XSCF> showstatus
    MBU Status:Normal;
*       MEM#0A Status:Faulted;
```

The status of the component is displayed following "Status:".
Table 3-1 describes the status of the components.

Table 3-1 Status of components

Display	Description
Normal	The unit is in the normal state.
Faulted	The unit is faulty and is not operating.
Degraded	A part of the unit has failed or degraded, but the unit is running.

Table 3-1 Status of components *(continued)*

Display	Description
Deconfigured	Due to the failure or degradation of another unit, the target unit and components of its underlying layer has been degraded, though there is no problem in them.
Maintenance	Maintenance is being performed. The replacefru, addfru, or initbb command is being executed.

3.3.4 Checking the status of a PCI expansion unit

If a PCI expansion unit is connected, execute the ioxadm command from the XSCF shell to check the status of the PCI expansion unit.

ioxadm command

Execute the ioxadm command to check the environmental conditions (temperature, voltage, etc.) or LED indications for the PCI expansion unit.

1. **Log in to the XSCF shell.**
2. **Execute the ioxadm command to check the environmental conditions of the specified PCI expansion unit.**
   To specify a PCI expansion unit, enter the serial number of the PCI expansion unit after determining it by executing the ioxadm list command.

   The following example shows the environmental conditions for the PCIBOX#2008 "2008" are the last four digits of the serial number of the PCI expansion unit.

```
XSCF> ioxadm env -te PCIBOX#2008
Location                  Sensor            Value Resolution Units
PCIBOX#2008               AIRFLOW         180.000      0.000 CHM
PCIBOX#2008               P_CONSUMPTION    68.000      0.000 W
PCIBOX#2008/PSU#0         FAN            3936.000      0.000 RPM
PCIBOX#2008/PSU#1         FAN            3584.000      0.000 RPM
PCIBOX#2008/FAN#0         FAN            3374.000      0.000 RPM
PCIBOX#2008/FAN#1         FAN            3374.000      0.000 RPM
PCIBOX#2008/FAN#2         FAN            3374.000      0.000 RPM
PCIBOX#2008/IOBT          T_INTAKE         26.000      0.000 C
PCIBOX#2008/IOBT          T_PART_NO0       31.500      0.000 C
PCIBOX#2008/IOBT          T_PART_NO1       30.750      0.000 C
PCIBOX#2008/IOBT          T_PART_NO2       31.500      0.000 C
PCIBOX#2008/IOBT          V_12_0V          12.069      0.000 V
PCIBOX#2008/IOBT          V_3_3_NO0         3.293      0.000 V
PCIBOX#2008/IOBT          V_3_3_NO1         3.295      0.000 V
PCIBOX#2008/IOBT          V_3_3_NO2         3.291      0.000 V
PCIBOX#2008/IOBT          V_3_3_NO3         3.300      0.000 V
PCIBOX#2008/IOBT          V_1_8V            1.804      0.000 V
PCIBOX#2008/IOBT          V_0_9V            0.900      0.000 V
```

3.3.5 Checking log information

Execute the showlogs command to check the error log information.

1. **Log in to the XSCF shell.**
2. **Execute the showlogs command to check the log information.**
   The log information is listed in the order of date, with the oldest appearing first.

   The following example shows that an Alarm status occurred in PSU#1 and PSU#2 at 12:45:31 on Oct 20, the Alarm status changed to a Warning status at 15:45:31 on the same day, and then the Alarm status further expanded to PSU#1, PSU#2, and PSU#3 at 17:45:31 on the same day.

```
XSCF> showlogs error
Date: Oct 20 12:45:31 JST 2012
    Code: 00112233-445566778899aabbcc-8899aabbcceeff0011223344
    Status: Alarm                 Occurred: Oct 20 12:45:31.000 JST 2012
    FRU: PSU#1,PSU#2
    Msg: ACFAIL occurred (ACS=3)(FEP type = A1)
Date: Oct 20 15:45:31 JST 2012
    Code: 00112233-445566778899aabbcc-8899aabbcceeff0011223344
    Status: Warning               Occurred: Oct 20 15:45:31.000 JST 2012
    FRU: PSU#1,PSU#2
    Msg: ACFAIL occurred (ACS=3)(FEP type = A1)
Date: Oct 20 17:45:31 JST 2012
    Code: 00112233-445566778899aabbcc-8899aabbcceeff0011223344
    Status: Alarm                 Occurred: Oct 20 17:45:31.000 JST 2012
    FRU: PSU#1,PSU#2, PSU#3,*
    Msg: ACFAIL occurred (ACS=3)(FEP type = A1)
```

Table 3-2 shows what log information each operand of the showlogs command can display.

Table 3-2 Operands of the showlogs command and the log to be displayed

Operand	Description
error	Lists the error log.
event	Lists the event log.
power	Lists the power log.
env	Lists the temperature history.
monitor	Lists the monitoring message log.
console	Lists the console message log.
ipl	Lists the IPL message log.
panic	Lists the panic message log.

3.3.6 Checking the messages output by the predictive self-repairing tool

Check the messages output from the Oracle Solaris Fault Manager predictive self-repairing tool, running on Oracle Solaris. Oracle Solaris Fault Manager has the following functions:

- Receives telemetry information about errors.
- Performs troubleshooting
- Disables the components that have experienced errors.
- Turns on the LED of a component that has experienced an error and displays the details in the system console message.

Table 3-3 lists typical messages that are generated if an error occurs. These messages indicate that the fault has already been diagnosed. If there are corrective actions that can be taken by the system, they have already been taken. In addition, if the system is running, corrective actions continue to be applied.
Messages are displayed on the console and are recorded in the /var/adm/messages file.

Table 3-3 Predictive self-repairing messages

Output Displayed	Description
Nov 1 16：30：20 dt88-292 EVENT-TIME：Tue Nov 1 16：30：20 PST 2005	EVENT-TIME: Time stamp for the diagnosis
Nov 1 16：30：20 dt88-292 PLATFORM：ORCL,SPARC64-X, CSN：-,HOSTNAME：dt88-292	PLATFORM: Description of the chassis in which the error occurred
Nov 1 16：30：20 dt88-292 SOURCE：eft, REV：1.13	SOURCE: Information regarding the diagnosis engine used to identify the error
Nov 1 16:30:20 dt88-292 EVENT-ID: afc7e660-d609-4b2f-86b8-ae7c6b8d50c4	EVENT-ID: Universally unique event ID for this error
Nov 1 16：30：20 dt88-292 DESC：Nov 1 16：30：20 dt88-292 A problem was detected in the PCI Express subsystem	DESC: Basic description of the error
Nov 1 16：30：20 dt88-292 Refer to http：//support.oracle.com/msg/SUN4-8000-0Y for more information.	Website: Where to find specific information and countermeasures for this error
Nov 1 16：30：20 dt88-292 AUTO-RESPONSE：One or more device instances may be disabled.	AUTO-RESPONSE: What the system has done (if anything) to alleviate any subsequent problems
Nov 1 16：30：20 dt88-292 IMPACT：Loss of services provided by the device instances associated with this fault.	IMPACT: Description of the assumed impact of the failure

Table 3-3 Predictive self-repairing messages *(continued)*

Output Displayed	Description
Nov 1 16：30：20 dt88-292 REC-ACTION： Schedule a repair procedure to replace the affected device.Use Nov 1 16：30：20 dt88-292 fmdump -v –u EVENT_ID to identify the device or contact Sun for support.	REC-ACTION: Brief description of the corrective action the system administrator should apply

3.3.7 Identifying the location of the chassis requiring maintenance

Execute the setlocator command to identify the location of the chassis requiring maintenance by causing the CHECK LED on the operation panel and the CHECK LED (locator) on the rear panel to blink.

1. **Log in to the XSCF shell.**
2. **Execute the setlocator command to blink the CHECK LED of the chassis requiring maintenance, and determine its location.**
   The CHECK LEDs on the operation and rear panels blink.

   An execution example in which the chassis requiring maintenance is the master chassis is shown below. When specifying a different chassis such as BB#01, set "setlocator -b 1 blink."

```
XSCF> setlocator -b 1 blink
```

For details on where to find and how to check the CHECK LEDs, see "2.3 Checking the LED Indications."

3.4 Downloading Error Log Information

This section describes the operation for downloading error log information.
To download error log information, use the XSCF log fetch function. The XSCF unit has a maintenance USB port so that maintenance information such as error logs can be obtained easily.
For details, see "12.1.15 Saving a log to a file with snapshot" and "12.1.16 Saving a log to a local USB device" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

Chapter 4

Preparing for Maintenance

This chapter describes the preparations that must be completed prior to performing any maintenance as well as the types of maintenance.

- Preparing Tools Required for Maintenance
- Confirming the System Configuration
- Understanding Types of Maintenance

4.1 Preparing Tools Required for Maintenance

This section explains tools required for maintenance. Table 4-1 lists the tools required for maintenance on a Field Replaceable Unit (FRU).

Table 4-1 Maintenance tools

	Item	Use
1	Phillips screwdriver (No.2)	Removing or replacing screws
2	Flathead screwdriver (small)	Removing or replacing screws
3	Wrist strap	For grounding static
4	ESD mat	For grounding static

4.2 Confirming the System Configuration

This section explains how to check the hardware and software configurations. After completing any maintenance, it is necessary to confirm that the the system configuration is the same as that before starting the work. If an error occurs in the

system, record the system configuration and the states of the components before starting maintenance. Then, confirm that the system configuration is the same after maintenance as it was before.

4.2.1 Confirming the hardware configuration

Execute the showhardconf command to confirm the configuration and status of the components mounted in the chassis. Before performing any maintenance work, check and record the hardware configuration of the chassis.

1. **Log in to the XSCF shell.**
2. **Execute the showhardconf command to confirm the hardware configuration information.**

```
XSCF> showhardconf
```

The following information is displayed:

- Current configuration and status
- Number of mounted Field Replaceable Units (FRUs)
- Status of the unit in which a physical partition error or degradation occurred
- Information on the PCI expansion unit
- Name properties of the PCI Express (PCIe) card

4.2.2 Confirming the software and firmware configurations

The software and firmware configurations and versions affect the operation of the system. To change the configuration or investigate a problem, check the latest state and check for any problems in the software.

Confirming the software configuration

Use Oracle Solaris commands to check the software configuration.
If you are logged in to the XSCF console, switch to the control domain console by executing the console command beforehand.
Table 4-2 lists the commands used for checking the software configuration.

Table 4-2 Commands for checking the software configuration

Command	Description
pkg(1) (Oracle Solaris 11) showrev(1M) (Oracle Solaris 10)	Displays Oracle Solaris correction information and version.
ldm(1M)	Displays logical domain configuration information.

1. **Log in to the control domain console of the physical partition where the component to be maintained is mounted.**
   For information on logging in to the control domain console, see "8.2 Switching to the Control Domain Console from the XSCF Shell" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.
2. **Execute the pkg(1) command to display Oracle Solaris correction information and version.**
   - For Oracle Solaris 11, execute the pkg(1) command.

```
# pkg info entire
          Name: entire
       Summary: entire incorporation including Support Repository Update
(Oracle Solaris 11.1.12.5.0).
```

   - For Oracle Solaris 10, execute the showrev(1M) command.

```
# showrev -p
```

For the Oracle VM Server for SPARC version, execute the ldm(1M) command.

```
# ldm -V
Logical Domains Manager (v 3.1)

        Hypervisor control protocol v 1.9
        Using Hypervisor MD v 1.3
```

Confirming the firmware configuration

Use XSCF shell commands to check the firmware configuration.
Table 4-3 lists the commands for checking the firmware configuration.

Table 4-3 Commands for checking the firmware configuration

Command	Description
version	Displays the current firmware version information.
showhardconf	Displays information on components mounted in the chassis.
showstatus	Displays the status of a component. Of the FRUs comprising the system, this command displays information on a unit or component that is faulty or degraded.
showboards	Displays information on a physical system board (PSB). Displays information on a physical system board that belongs to the specified physical partition and information on all the physical system boards that are mounted.
showpcl	Displays the configuration information for a physical partition (hardware resource information).
showfru	Displays the setting information for a device.

1. **Log in to the XSCF shell.**
2. **Execute the version command to determine the firmware version information.**
   In the following example, "-c xcp" is entered to determine the overall XCP version.

```
XSCF> version -c xcp
```

4.3 Understanding Types of Maintenance

This section explains the types of maintenance.
The single-chassis configuration and building block configuration denote the following system configurations.

Table 4-4 System configuration

Configuration	Description
Single-chassis configuration	Configuration in which a single SPARC M10-4 is used
Building block configuration	Configuration in which 2 or more SPARC M10-4S's are combined and used

There are the following five types of maintenance.

- Active/hot maintenance
  Maintenance work is performed while the physical partition remains turned on and the input power to the chassis in which the target Field Replaceable Unit (FRU) is mounted is on (power cord is connected). Active/hot maintenance can be performed only on FRUs that have a redundant configuration or which support PCI hot plugging (PHP).

Figure 4-1 Active/hot maintenance (for SPARC M10-4S maintenance)

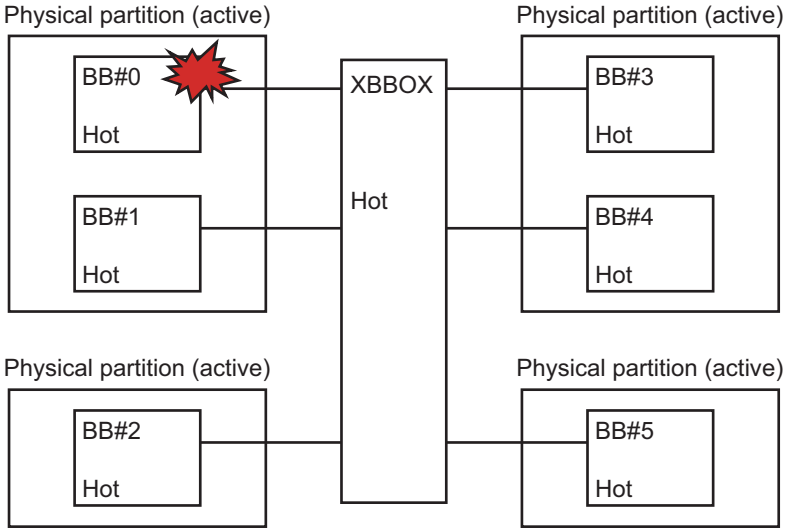
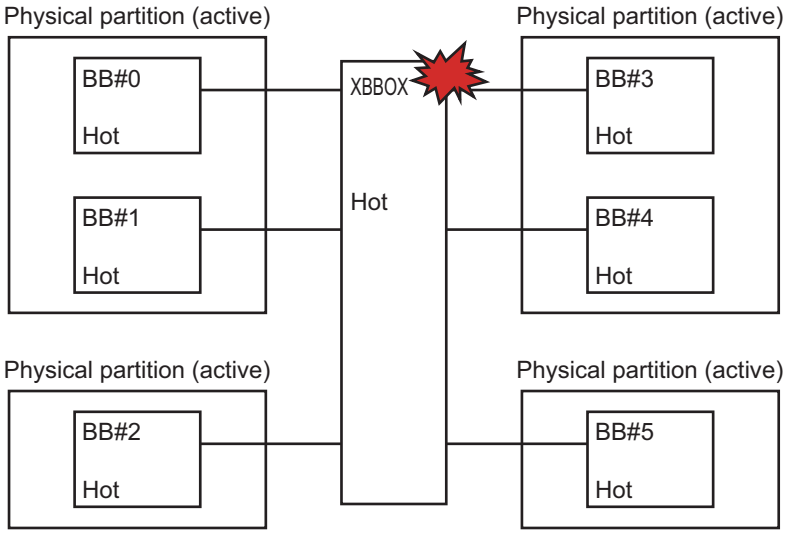


Figure 4-2 Active/hot maintenance (for crossbar box maintenance)



- Active/cold maintenance
  Maintenance work is performed while the physical partition to which the maintenance-target FRU belongs remains turned on but the input power to the chassis in which the target FRU is mounted is off (power cord is disconnected). It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition. For a single-chassis configuration, since the chassis cannot be disconnected with DR, active/cold maintenance cannot be performed.

Figure 4-3 Active/cold maintenance (for SPARC M10-4S maintenance)

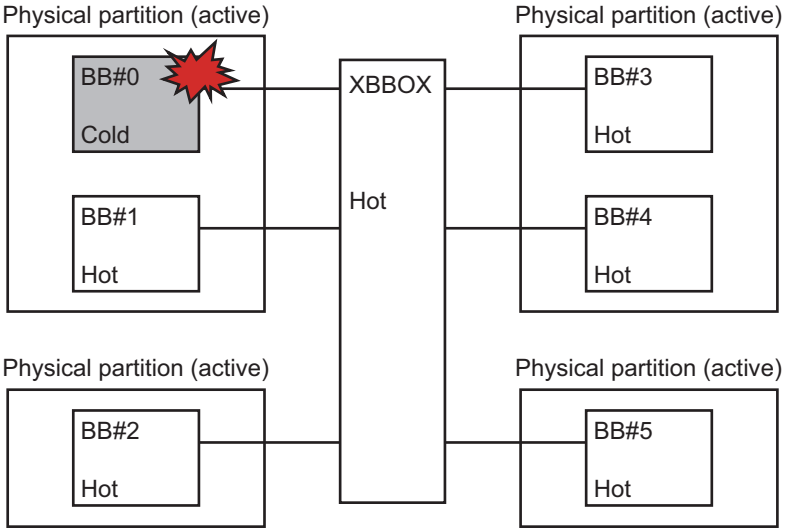
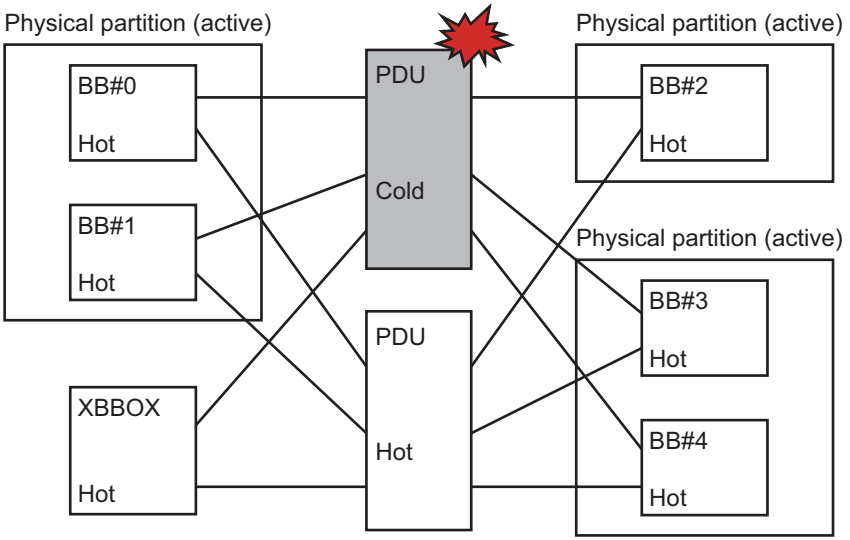


Figure 4-4 Active/cold maintenance (for dedicated power distribution unit maintenance)



- Inactive/hot maintenance
  Maintenance work is performed while the physical partition to which the maintenance-target FRU belongs is powered off but the input power to the chassis in which the target FRU is mounted is on (power cord is connected).

Figure 4-5 Inactive/hot maintenance (for SPARC M10-4S maintenance)

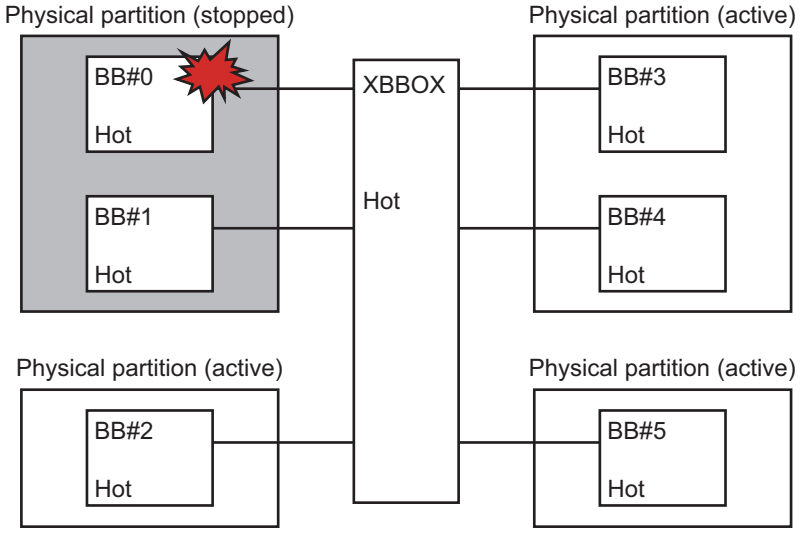
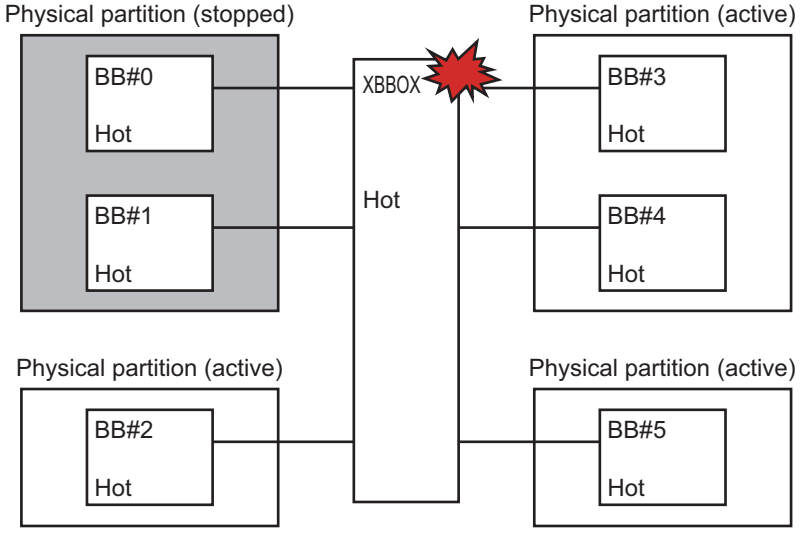
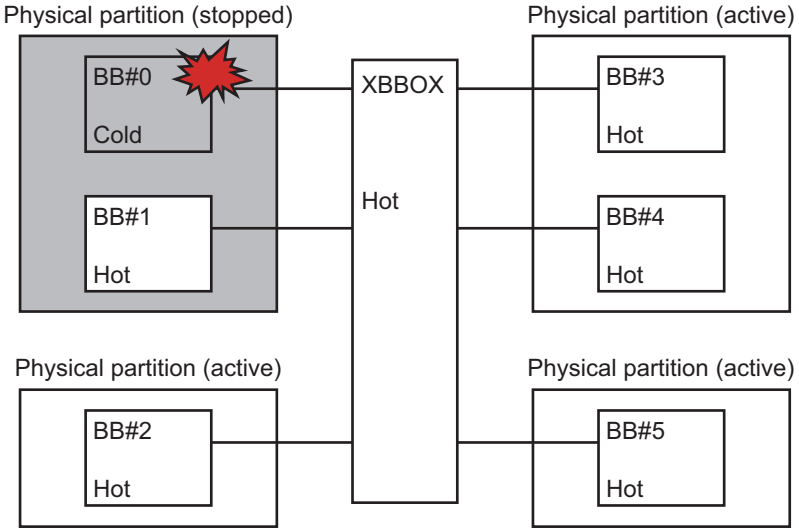


Figure 4-6 Inactive/hot maintenance (for crossbar box maintenance)



- Inactive/cold maintenance
  Maintenance work is performed while the physical partition to which the maintenance-target FRU belongs is powered off and the input power to the chassis in which the target FRU is mounted is off (power cord is disconnected).

Figure 4-7 Inactive/cold maintenance (for SPARC M10-4S maintenance)



- System-stopped maintenance
  Maintenance work is performed while all the physical partitions are powered off and input power to the chassis in which the target FRU is mounted is off (power cord is disconnected).

Figure 4-8 System-stopped maintenance (for SPARC M10-4S maintenance)

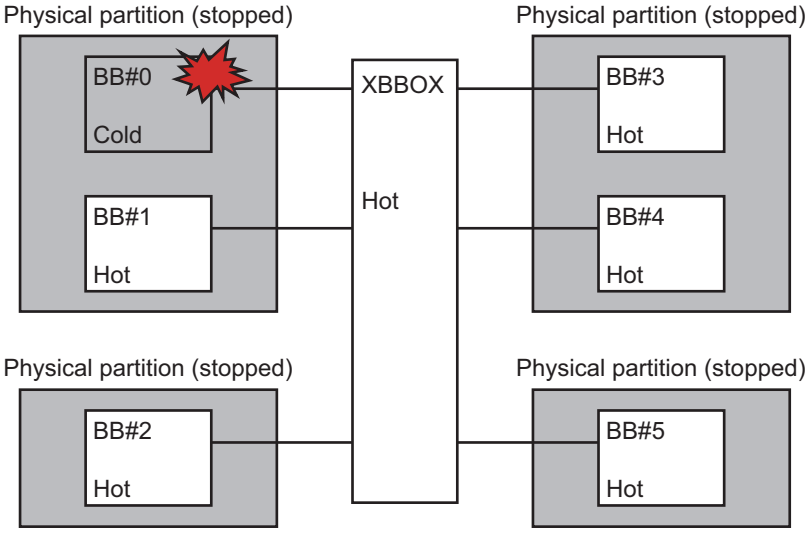


Figure 4-9 System-stopped maintenance (for crossbar box maintenance)

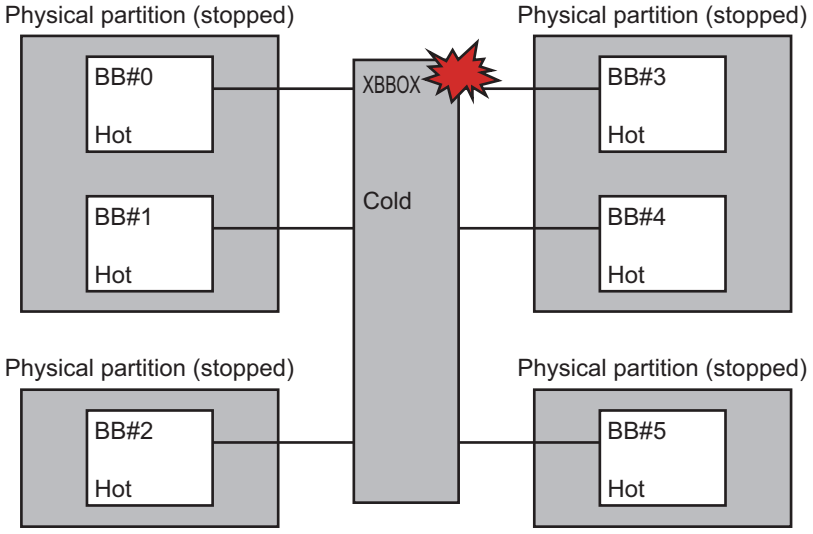
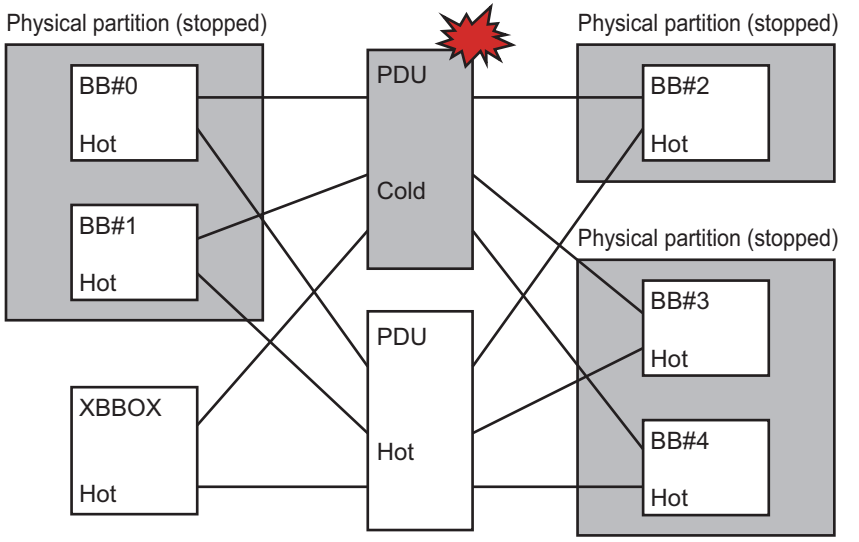


Figure 4-10 System-stopped maintenance (for dedicated power distribution unit maintenance)



The following describes the types of maintenance for FRUs.

Table 4-5 Types of maintenance for SPARC M10-4

Supported: Maintenance can be performed / Unsupported: Maintenance cannot be performed

FRU	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped	Reference
CPU memory unit	Unsupported	Unsupported	Unsupported	Supported	Supported	Chapter 7

Table 4-5 Types of maintenance for SPARC M10-4 *(continued)*

Supported: Maintenance can be performed / Unsupported: Maintenance cannot be performed

FRU	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped	Reference
Memory	Unsupported	Unsupported	Unsupported	Supported	Supported	Chapter 8
Power supply unit	Supported	Unsupported	Supported	Supported	Supported	Chapter 10
Fan unit	Supported	Unsupported	Supported	Supported	Supported	Chapter 11
Internal disk	Supported (*2)	Unsupported	Supported	Supported	Supported	Chapter 12
PCIe card (*3)	-	-	-	-	-	Chapter 13
PSU backplane unit	Unsupported	Unsupported	Unsupported	Supported	Supported	Chapter 14
Operation panel	Unsupported	Unsupported	Unsupported	Supported	Supported	Chapter 15

*1: The inactive/cold maintenance procedure is the same as that for stopping the system, therefore see the procedure for system-stopped maintenance.
*2: Supported only for internal disks of devices other than boot devices. If, however, the boot device has a redundant configuration (RAID configuration), active/hot maintenance is supported.
*3: The types of maintenance for PCIe cards are different from those of other FRUs. For details, see Table 13-1.

Table 4-6 Types of maintenance for SPARC M10-4S

Supported: Maintenance can be performed / Unsupported: Maintenance cannot be performed

FRU	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped	Reference
CPU memory unit	Unsupported	Supported (*2)	Unsupported	Supported	Supported	Chapter 7
Memory	Unsupported	Supported (*2)	Unsupported	Supported	Supported	Chapter 8
Crossbar unit	Unsupported	Supported (*2)	Unsupported	Supported	Supported	Chapter 9
Power supply unit	Supported (*3)	Supported (*2)	Supported	Supported	Supported	Chapter 10
Fan unit	Supported	Supported (*2)	Supported	Supported	Supported	Chapter 11
Internal disk	Supported (*4)	Supported (*2)	Supported	Supported	Supported	Chapter 12
PCIe card (*5)	-	-	-	-	-	Chapter 13
PSU backplane unit	Unsupported	Supported (*2)	Unsupported	Supported	Supported	Chapter 14

Table 4-6 Types of maintenance for SPARC M10-4S *(continued)*

Supported: Maintenance can be performed / Unsupported: Maintenance cannot be performed

FRU	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped	Reference
Operation panel	Unsupported	Supported (*2)	Unsupported	Supported	Supported	Chapter 15

*1: For a single-chassis configuration, the inactive/cold maintenance procedure is the same as that for stopping the system, therefore see the procedure for system-stopped maintenance.
*2: It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition.
*3: Active/hot replacement can be performed only with a redundant configuration.
*4: Supported only for internal disks of devices other than boot devices. If, however, the boot device has a redundant configuration (RAID configuration), active/hot maintenance is supported.
*5: The types of maintenance for PCIe cards are different from those of other FRUs. For details, see Table 13-1.

Table 4-7 Types of maintenance for crossbar box

Supported: Maintenance can be performed / Unsupported: Maintenance cannot be performed

FRU	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped	Reference
Crossbar unit	Unsupported	Supported (*1)	Unsupported	Supported	Supported (*3)	Chapter 16
XSCF unit	Supported (*4)	Unsupported (*2)	Supported	Unsupported (*2)	Supported (*3)	Chapter 17
Power supply unit	Supported (*5)	Unsupported (*2)	Supported	Unsupported (*2)	Supported (*3)	Chapter 18
Fan unit	Supported	Unsupported (*2)	Supported	Unsupported (*2)	Supported (*3)	Chapter 19
XSCF interface unit	Unsupported	Unsupported (*2)	Unsupported	Unsupported (*2)	Supported (*3)	Chapter 20
Crossbar backplane unit	Unsupported	Unsupported (*2)	Unsupported	Unsupported (*2)	Supported (*3)	Chapter 21
Fan backplane	Unsupported	Unsupported (*2)	Unsupported	Unsupported (*2)	Supported (*3)	Chapter 22
Operation panel	Unsupported	Unsupported (*2)	Unsupported	Unsupported (*2)	Supported (*3)	Chapter 23

*1: If any physical partition mounted on two or more chassis is currently operating, the crossbar box cannot be powered off.
*2: If any physical partition is currently operating, the crossbar box cannot be powered off.
*3: All the physical partitions must be powered off, and the system must be completely shut down.
*4: The XSCF must be configured as a slave before maintenance is started. If the XSCF is operating as the master XSCF, switch it to a standby XSCF.
*5: Active/hot replacement can be performed only with a redundant configuration.

Table 4-8 Types of maintenance for cables and dedicated power distribution unit

Supported: Maintenance can be performed / Unsupported: Maintenance cannot be performed

FRU	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped	Reference
Crossbar cable (electrical)	Unsupported	Unsupported	Unsupported	Supported	Supported	Chapter 24
Crossbar cable (optical)	Unsupported	Unsupported	Unsupported	Supported	Supported	Chapter 25

Table 4-8 Types of maintenance for cables and dedicated power distribution unit *(continued)*

Supported: Maintenance can be performed / Unsupported: Maintenance cannot be performed

FRU	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped	Reference
XSCF BB control cable	Supported (*1)	Supported	Supported	Supported	Supported	Chapter 26
XSCF DUAL control cable	Supported (*1)	Supported	Supported	Supported	Supported	Chapter 27
Cable kit	Unsupported	Unsupported (*2)	Unsupported	Unsupported (*2)	Supported (*3)	Chapter 28
Dedicated power distribution unit	Unsupported	Supported	Unsupported	Unsupported	Supported	Chapter 29

*1: The XSCF must be configured as a slave before maintenance is started. If the XSCF is operating as the master XSCF, switch it to a standby XSCF.
*2: If any physical partition is currently operating, the crossbar box cannot be powered off.
*3: All the physical partitions must be powered off, and the system must be completely shut down.

Chapter 5

Understanding the Preparations for Enabling Maintenance

This chapter describes the preparations that must be completed before you physically remove a component. See this chapter, as required, when performing the maintenance work on each component described in Chapter 7 onwards.

- Releasing an FRU from the System with the replacefru Command
- Releasing a Chassis from the Physical Partition
- Powering Off the Physical Partition Requiring Maintenance
- Stopping the Entire System
- Accessing Components

Caution - Do not operate a target Field Replaceable Unit (FRU) while OpenBoot PROM is running (the ok prompt is displayed). After powering off the physical partition or starting Oracle Solaris, operate the target FRU.

5.1 Releasing an FRU from the System with the replacefru Command

This section describes the procedure for releasing an FRU requiring maintenance from the system. The following FRUs can be the target of maintenance:

- Power supply units of the SPARC M10-4/M10-4S and the crossbar box
- Fan units of the SPARC M10-4/M10-4S and the crossbar box
- XSCF unit of the crossbar box
- SPARC M10-4/M10-4S chassis itself and crossbar box chassis itself

1. **Log in to the XSCF shell.**
2. **Execute the replacefru command to display the maintenance menu.**

```
XSCF> replacefru
```

3. **Select the FRU requiring maintenance by specifying it with a numeric key.**
   When the system is configured without a crossbar box, the following screen is not displayed. Proceed to step 4.

   In the following example, since the SPARC M10-4S chassis itself is selected, "1" is entered.

```
--------------------------------------------------------------------------------
Maintenance/Replacement Menu
Please select a type of model which has FRU to be replaced.

1. BB          (4s Building Block Model)
2. XBBOX       (XB-BOX Model)
--------------------------------------------------------------------------------
Select [1,2|c:cancel] :1
```

4. **Select the FRU requiring maintenance by specifying it with a numeric key.**
   In the following example, since BB#0 is showing "Degraded" indicating abnormality, "1" is entered.

```
--------------------------------------------------------------------------------
Maintenance/Replacement Menu
Please select the chassis including replaced FRU.

No. FRU                  Status
--- -------------------- --------------
 1  /BB#0                Degraded
 2  /BB#1                Normal
 3  /BB#2                Unmount
 4  /BB#3                Unmount
 5  /BB#4                Unmount
 6  /BB#5                Unmount
 7  /BB#6                Unmount
 8  /BB#7                Unmount
 9  /BB#8                Unmount
10  /BB#9                Unmount
11  /BB#10               Unmount
12  /BB#11               Unmount
--------------------------------------------------------------------------------
Select [1-12|c:cancel] :1
```

5. **Select the FRU requiring maintenance by specifying it with a numeric key.**
   In the following example, since the SPARC M10-4S chassis itself is faulty, "1" is entered.

```
--------------------------------------------------------------------------------
Maintenance/Replacement Menu
Please select the BB or a type of FRU to be replaced.
```

```
1. BB itself
2. FAN         (Fan Unit)
3. PSU         (Power Supply Unit)
--------------------------------------------------------------------------------
Select [1-3|c:cancel] :1
```

6. **Select the faulty FRU by specifying it with a numeric key.**
   Since it was confirmed in step 4 that BB#0 is faulty, "1" is also entered here.

```
--------------------------------------------------------------------------------
Maintenance/Replacement Menu
Please select a FRU to be replaced.

No. FRU                  Status
--- -------------------- --------------
 1  /BB#0                Degraded
--------------------------------------------------------------------------------
Select [1|b:back] :1
```

7. **After confirming that the selected FRU is displayed, enter "r".**

```
You are about to replace BB#0.
Do you want to continue?[r:replace|c:cancel] :r
```

8. **Confirm that the CHECK LED of the FRU is on or blinking.**
   To release a SPARC M10-4S or crossbar box chassis itself, confirm that the system locator on the chassis is blinking.

   For details on the locations of LEDs, see "2.3.2 LEDs on the rear panel (System locator)" and "2.3.3 LEDs on each component."

```
Please execute the following steps:
1) Confirm the XSCF STANDBY LED of BB#0 is not lit.
2) Turn off the breaker of BB#0.
3) Remove BB#0.
4) Execute either the following:
  4-1) After the exchanged device is connected with the system,
       turn on the breaker of BB#0, and please select 'finish'.
  4-2) If you want to suspend the maintenance without exchanging device,
       please select 'cancel'.
[f:finish|c:cancel] :
```

You can now start FRU maintenance.

5.2 Releasing a Chassis from the Physical Partition

This section describes the procedure for releasing a chassis requiring maintenance from the physical partition by using dynamic reconfiguration (DR). DR can be used only for a building block configuration.

Note - When there is no free space on a physical partition or when all the resources are assigned to the control domain, DR cannot be applied to the physical partition.

1. **Log in to the XSCF shell.**
2. **When the chassis requiring maintenance is operating as the master chassis, execute the switchscf command to switch the master XSCF to a standby XSCF.**
   In response to the confirmation message, enter "y".
   When the chassis requiring maintenance is a slave XSCF, proceed to step 4.

```
XSCF> switchscf -t Standby
The XSCF unit switch between the Master and Standby states.
Continue? [y|n] :y
```

3. **Log in to the XSCF again.**
4. **Execute the showpparstatus command to confirm the operating condition of the physical partition.**
   In the following example, [Status] of PPAR-ID 00 displays "Running", which indicates that the physical partition is operating.

```
XSCF> showpparstatus -p 0
PPAR-ID         PPAR Status
00              Running
```

5. **Execute the showdomainstatus command to confirm the operating condition of the logical domain.**
   In the following example, [Status] of the logical domain displays "Solaris running", which indicates that Oracle Solaris is operating.

```
XSCF>  showdomainstatus -p 0
Logical Domain Name   Status
primary               Solaris running
guest0                Solaris running
guest1                Solaris running
domain01              Solaris running
```

6. **Connect to the control domain console of the physical partition.**

7. **Execute the ldm list-domain command to confirm the operating condition of the logical domain.**
   In the following example, the [STATE] of the control domain and three guest domains displays "active", which indicates that the logical domain is operating.

```
# ldm list-domain
NAME              STATE      FLAGS   CONS    VCPU  MEMORY   UTIL  UPTIME
primary           active     -n-cv-  UART    14    8G        64%  2h 54m
guest0            active     -n----  5000    16    8G        42%  2h 54m
guest1            active     -n----  5001    16    8G        11%  2h 54m
domain01          active     -n----  5002    16    8G       7.3%  2h 54m
```

8. **Execute the ldm list-devices -a command to check the usage status of the resource.**
   The following example shows the resources that are bound to a logical domain and the resources that are not bound to a logical domain.

```
# ldm list-devices -a
CORE
    ID      %FREE   CPUSET
    0       0       (0, 1)
    4       0       (8, 9)
    8       0       (16, 17)
------------------------Ommitted-----------------------
    184     0       (368, 369)
    188     100     (376, 377)
    512     100     (1024, 1025)
    516     100     (1032, 1033)
    520     100     (1040, 1041)
    524     100     (1048, 1049)
------------------------Ommitted-----------------------
VCPU
    PID     %FREE   PM
    0       0       no
    1       0       no
    8       0       no
    9       0       no
------------------------Ommitted-----------------------
    369     0       no
    376     100     ---
    377     100     ---
    1024    100     ---
    1025    100     ---
    1032    100     ---
    1033    100     ---
------------------------Ommitted-----------------------
```

9. **Execute the ldm list-io command to check the usage status of the I/O device.**
   In the following example, values displayed under [TYPE] are all "BUS" for PCIE0 to PCIE11 under [NAME], which indicates that they are PCIe root complexes.

Values displayed under [DOMAIN] are "primary" or "domain01", which indicates that they are assigned to the control domain or domain01.

```
# ldm list-io
NAME                                      TYPE   BUS      DOMAIN   STATUS
----                                      ----   ---      ------   ------
PCIE0                                     BUS    PCIE0    primary  IOV
PCIE1                                     BUS    PCIE1    primary  IOV
PCIE2                                     BUS    PCIE2    primary  IOV
PCIE3                                     BUS    PCIE3    primary  IOV
PCIE8                                     BUS    PCIE8    domain01 IOV
PCIE9                                     BUS    PCIE9    domain01 IOV
PCIE10                                    BUS    PCIE10   domain01 IOV
PCIE11                                    BUS    PCIE11   domain01 IOV
/BB0/CMUL/NET0                            PCIE   PCIE0    primary  OCC
/BB0/CMUL/SASHBA                          PCIE   PCIE0    primary  OCC
/BB0/PCI0                                 PCIE   PCIE1    primary  EMP
/BB0/PCI3                                 PCIE   PCIE2    primary  EMP
/BB0/PCI4                                 PCIE   PCIE2    primary  EMP
/BB0/PCI7                                 PCIE   PCIE3    primary  EMP
/BB0/PCI8                                 PCIE   PCIE3    primary  EMP
/BB1/CMUL/NET0                            PCIE   PCIE8    domain01 OCC
/BB1/CMUL/SASHBA                          PCIE   PCIE8    domain01 OCC
/BB1/PCI0                                 PCIE   PCIE9    domain01 EMP
/BB1/PCI3                                 PCIE   PCIE10   domain01 EMP
/BB1/PCI4                                 PCIE   PCIE10   domain01 EMP
/BB1/PCI7                                 PCIE   PCIE11   domain01 EMP
/BB1/PCI8                                 PCIE   PCIE11   domain01 EMP
```

10. **Delete all the I/O devices from the domain to which the I/O devices of the system board to be deleted are assigned.**
    In the following example, domain01 is stopped and the PCIe root complexes that are owned by domain01 and related to the system board to be deleted are released.

```
# ldm stop domain01
# ldm rm-io PCIE8 domain01
# ldm rm-io PCIE9 domain01
# ldm rm-io PCIE10 domain01
# ldm rm-io PCIE11 domain01
```

11. **Execute the ldm list-io command again to check the usage status of the I/O devices.**
    The following example shows that the values displayed under [DOMAIN] for PCIE8, PCIE9, PCIE10, and PCIE11, which were used by domain01, are deleted and the I/O devices are released.

```
# ldm list-io
NAME                                      TYPE   BUS      DOMAIN   STATUS
----                                      ----   ---      ------   ------
PCIE0                                     BUS    PCIE0    primary  IOV
```

```
PCIE1                                    BUS    PCIE1    primary  IOV
PCIE2                                    BUS    PCIE2    primary  IOV
PCIE3                                    BUS    PCIE3    primary  IOV
PCIE8                                    BUS    PCIE8
PCIE9                                    BUS    PCIE9
PCIE10                                   BUS    PCIE10
PCIE11                                   BUS    PCIE11
/BB0/CMUL/NET0                           PCIE   PCIE0    primary  OCC
/BB0/CMUL/SASHBA                         PCIE   PCIE0    primary  OCC
/BB0/PCI0                                PCIE   PCIE1    primary  EMP
/BB0/PCI3                                PCIE   PCIE2    primary  EMP
/BB0/PCI4                                PCIE   PCIE2    primary  EMP
/BB0/PCI7                                PCIE   PCIE3    primary  EMP
/BB0/PCI8                                PCIE   PCIE3    primary  EMP
/BB1/CMUL/NET0                           PCIE   PCIE8
/BB1/CMUL/SASHBA                         PCIE   PCIE8
/BB1/PCI0                                PCIE   PCIE9
/BB1/PCI3                                PCIE   PCIE10
/BB1/PCI4                                PCIE   PCIE10
/BB1/PCI7                                PCIE   PCIE11
/BB1/PCI8                                PCIE   PCIE11
```

12. **Execute the showboards command to check the state of the chassis requiring maintenance.**
    The BB-ID of the chassis requiring maintenance is indicated by the system board (PSB) number.

    In the following example, [Fault] of PSB 01-0 displays "Degraded", which indicates that the system board is operating but has some faulty parts.

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ----------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    y    y    y    Passed  Degraded
02-0 00(02)       Assigned    y    y    y    Passed  Normal
03-0 00(03)       Assigned    n    n    n    Passed  Faulted
```

13. **Execute the deleteboard command to release the chassis requiring maintenance from the physical partition.**
    In the following example, PSB 01-0 is released from the physical partition.

```
XSCF> deleteboard -c disconnect 01-0
```

14. **Execute the showboards command to confirm that the chassis requiring maintenance has been released from the physical partition.**
    In the following example, all of [Pwr], [Conn], and [Conf] of PSB 01-0 display "n", which indicates that PSB 01-0 has been released.

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ----------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    n    n    n    Passed  Degraded
02-0 00(02)       Assigned    y    y    y    Passed  Normal
03-0 00(03)       Assigned    n    n    n    Passed  Faulted
```

5.3 Powering Off the Physical Partition Requiring Maintenance

This section describes the procedure for powering off the physical partition requiring maintenance. This is applicable if the system has a building block configuration and has multiple physical partitions.

1. **Log in to the XSCF shell.**
2. **When the chassis requiring maintenance is operating as the master chassis, execute the switchscf command to switch the master XSCF to a standby XSCF.**
   In response to the confirmation message, enter "y".

   When the chassis requiring maintenance is a slave XSCF, proceed to step 4.

```
XSCF> switchscf -t Standby
The XSCF unit switch between the Master and Standby states.
Continue? [y|n] :y
```

3. **Log in to the master XSCF again.**
4. **Execute the showpparstatus command to confirm the operating condition of the physical partition.**
   In the following example, [PPAR Status] of PPAR-ID 00 displays "Running", which indicates that the physical partition is operating.

```
XSCF> showpparstatus -p 0
PPAR-ID         PPAR Status
00              Running
```

5. **Execute the showdomainstatus command to confirm the operating condition of the logical domain.**
   In the following example, [Status] of the logical domain displays "Solaris running", which indicates that Oracle Solaris is operating.

```
XSCF>  showdomainstatus -p 0
Logical Domain Name   Status
primary               Solaris running
4S-159-D0-G0          Solaris running
4S-159-D0-G1          Solaris running
4S-159-D0-G2          Solaris running
```

6. **Execute the showboards command to check the state of the chassis requiring maintenance.**
   The BB-ID of the chassis requiring maintenance is indicated by the system board (PSB) number.

   In the following example, we can see that [PPAR-ID] of PSB 01-0 is "00".

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ----------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    y    y    y    Passed  Normal
```

7. **Execute the poweroff command to stop all the logical domains on the physical partition requiring maintenance.**
   In response to the confirmation message, enter "y".

```
XSCF> poweroff -p 0
PPAR-IDs to power off:00
Continue? [y|n] :y
00 : Powering off
```

8. **Execute the showpparstatus command to confirm that the power to the physical partition is turned off.**
   In the following example, [PPAR Status] of PPAR-ID 00 displays "Powered Off", which indicates that the power to the physical partition has been turned off.

```
XSCF> showpparstatus -p 0
PPAR-ID        PPAR Status
00             Powered Off
```

9. **Switch the mode switches for the master chassis and those chassis whose XSCFs are in the standby state to Service mode.**
   - **For a building block configuration (without crossbar box)**
     Switch the mode switches of BB-ID#00 and #01 to Service mode.
   - **For a building block configuration (with crossbar box)**
     Switch the mode switches of BB-ID#80 and #81 to Service mode.

5.4 Stopping the Entire System

This section describes the procedure for stopping the entire system. To undertake system-stopped maintenance, power off all the physical partitions to stop the entire system before physically removing any components.
There are two ways of stopping the system, as follows:

- Stopping the system with the XSCF command
- Stopping the system from the operation panel

Note - Before stopping the system, inform the users that the system will be stopped.
Note - When a physical partition is stopped by operating the XSCF command or the operation panel, all the logical domains on the physical partition are stopped. Stop applications as required.

---

1. **Stop the entire system.**
   For details, see "5.4.1 Stopping the system with the XSCF command" or "5.4.2 Stopping the system from the operation panel."

2. **Execute the showpparstatus command to confirm that the power to the physical partition is turned off.**
   In the following example, [PPAR Status] of PPAR-IDs 00, 01, and 02 display "Powered Off", which indicates that the power to all the physical partitions has been turned off.

```
XSCF> showpparstatus -a
PPAR-ID         PPAR Status
00              Powered Off
01              Powered Off
02              Powered Off
```

3. **Execute the showdomainstatus command to confirm the operating condition of the logical domain.**
   In the following example, [Status] of the logical domain displays "Solaris powering down", which indicates that Oracle Solaris is shutting down.

```
XSCF>  showdomainstatus -p 0
Logical Domain Name    Status
primary                Solaris powering down
4S-159-D0-G0           Solaris powering down
4S-159-D0-G1           Solaris powering down
4S-159-D0-G2           Solaris powering down
```

5.4.1 Stopping the system with the XSCF command

1. **Switch the mode switch on the operation panel to Service mode.**
   For details, see "2.2.2 Control function of the operation panel."

Note - For a building block configuration, switch the mode switches of the master chassis and those chassis whose XSCFs are in the standby state.

---

2. **Log in to the XSCF shell.**
3. **Execute the poweroff command.**
   In response to the confirmation message, enter "y".

   In the following example, the status of PPAR-IDs 00 and 01 displays "Powering off", which indicates that the power to the physical partitions is being turned off.

```
XSCF> poweroff -a
PPAR-IDs to power off:00,01
Continue? [y|n] :y
00 : Powering off
01 : Powering off
```

   The following processes are performed.

   - Oracle Solaris is completely shut down.
   - The system stops and enters the POWERON READY state (The XSCF is running).

   For details, see "6.2.2 Stopping the whole system" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

4. **Check that the POWER LED on the operation panel is off.**

Note - For a building block configuration, check the POWER LEDs on all the chassis that make up the system.

5.4.2 Stopping the system from the operation panel

1. **Switch the mode switch on the operation panel to Service mode.**
   For details, see "2.2.2 Control function of the operation panel."

Note - For a building block configuration, switch the mode switches of the master chassis and those chassis whose XSCFs are in the standby state.

---

2. **Press the power switch on the operation panel for 4 seconds or more.**
   For details, see "2.2.2 Control function of the operation panel."

Note - For a building block configuration, press the power switch on the master chassis. The power switches of the other chassis are disabled.

3. **Check that the POWER LED on the operation panel is off.**

Note - For a building block configuration, check the POWER LEDs on all the chassis that make up the system.

5.5 Accessing Components

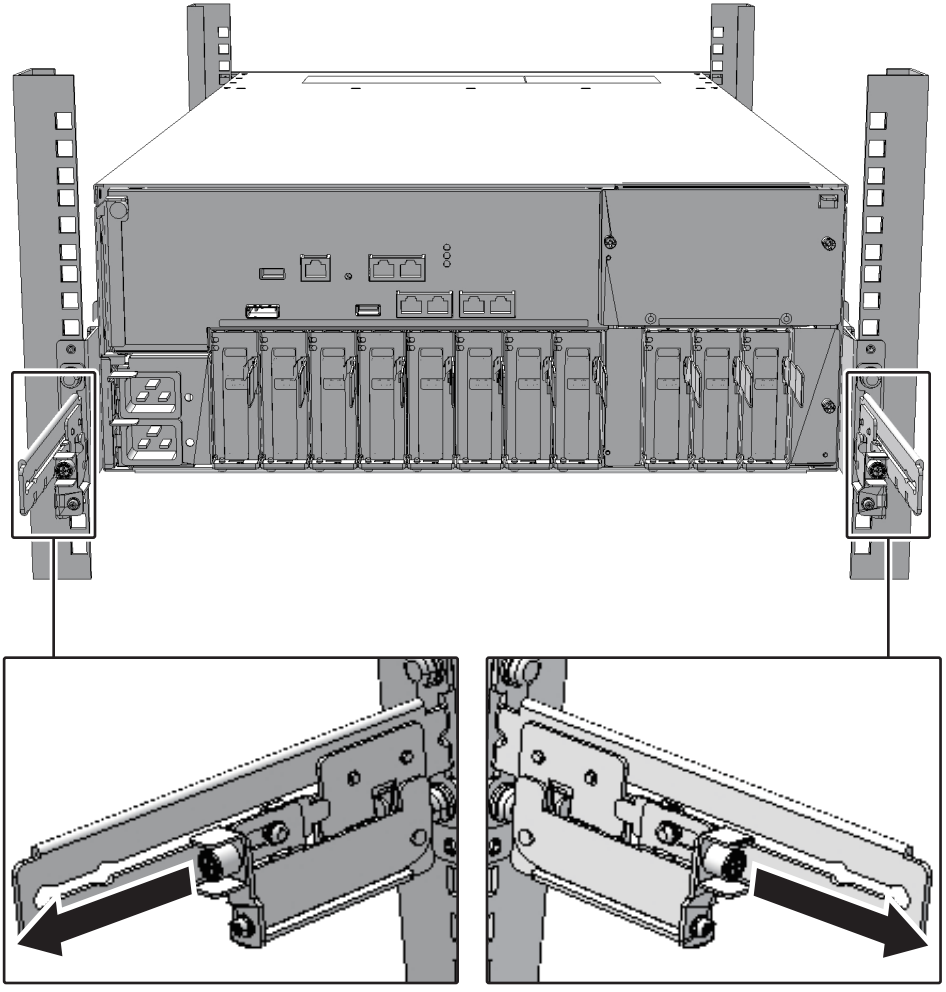
This section describes the operations that must be completed prior to accessing a component requiring maintenance.

5.5.1 Lowering the cable support

For a component that is accessed from the rear of the SPARC M10-4/M10-4S, the cable support must be lowered and then the cables removed.

1. **Loosen the right and left screws fixing the cable support, and unlock it by pulling the upper and lower metal fittings towards you (in the direction of the arrow).**

Figure 5-1 Locations of screws holding the cable support



2. **Lower the cable support.**

5.5.2 Removing the power cord

When removing the power cord of the SPARC M10-4S or the crossbar box to perform maintenance work on a component, do so only after removing the cable clamp from the power cord.

1. **Release the latch (A in the figure) of the cable clamp.**
   Pulling the cable clamp toward the rear of the chassis facilitates release of the latch.

Figure 5-2 Releasing the cable clamp (SPARC M10-4/M10-4S)

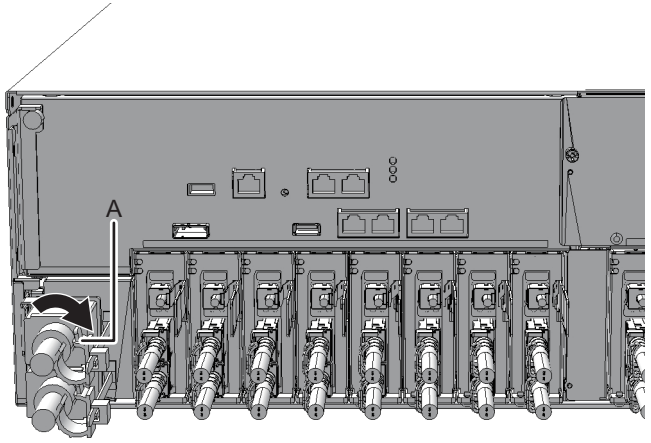
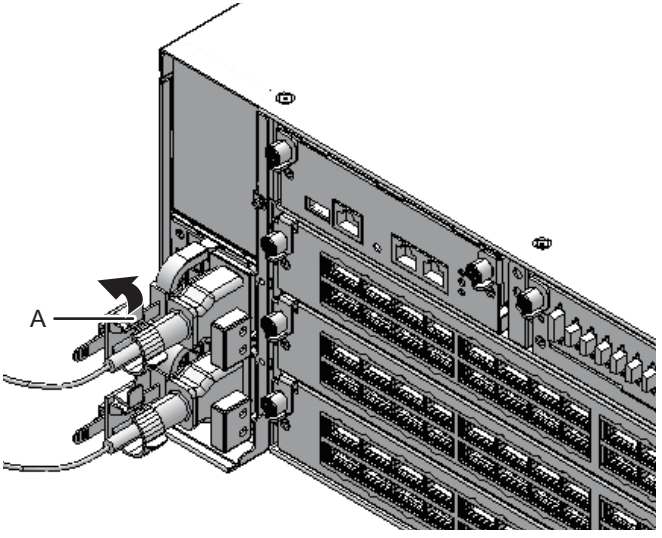


Figure 5-3 Releasing the cable clamp (crossbar box)



2. **Remove the power cord of the SPARC M10-4S from the PSU backplane unit, or remove the power cord of the crossbar box from the power supply unit.**

Figure 5-4 Removing the power cord (SPARC M10-4/M10-4S)

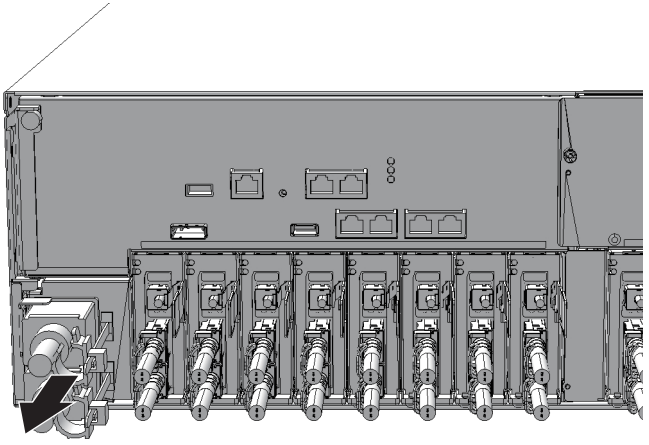
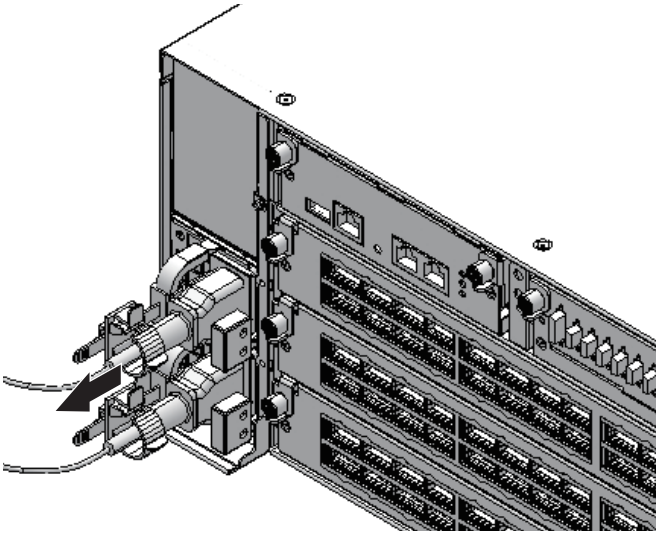


Figure 5-5 Removing the power cord (crossbar box)



5.5.3 Removing the front cover

When performing maintenance on a component from the front of a SPARC M10-4S or crossbar box chassis, remove the front cover before starting the work.

1. **Release the right and left slide locks of the front cover and pull it towards the front.**

Figure 5-6 Releasing the slide locks of the front cover (SPARC M10-4/M10-4S)

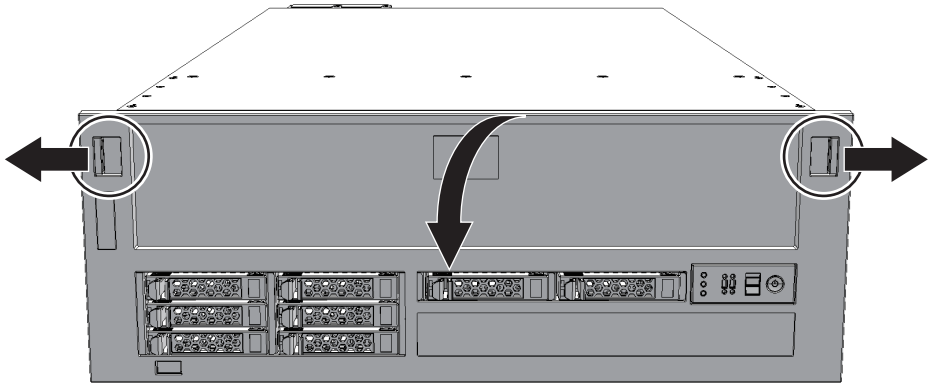
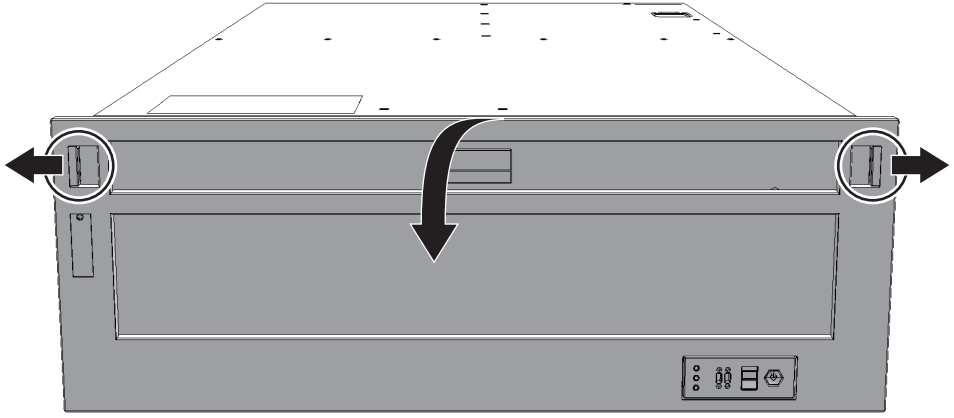


Figure 5-7 Releasing the slide locks of the front cover (crossbar box)



2. **Lift the front cover upwards to remove it.**

Chapter 6

Understanding the Preparations for Restoring the System

This chapter describes the procedures required to restore the system after component maintenance. See this chapter, as required, when performing maintenance on each component described in Chapter 7 onwards.

- Incorporating an FRU into the System with the replacefru Command
- Incorporating a Chassis into a Physical Partition
- Powering On the Physical Partition Requiring Maintenance
- Starting the Entire System
- Restoring the Chassis

6.1 Incorporating an FRU into the System with the replacefru Command

This section describes the procedure for incorporating a Field Replaceable Unit (FRU) into the system after maintenance. To do this, resume the replacefru command, which is running, to incorporate the FRU into the system.

1. **After completing maintenance of the target FRU, return to the operation of the replacefru command of the XSCF firmware, and enter "f".**

```
Please execute the following steps:
1) Confirm the XSCF STANDBY LED of BB#0 is not lit.
2) Turn off the breaker of BB#0.
3) Remove BB#0.
4) Execute either the following:
  4-1) After the exchanged device is connected with the system,
       turn on the breaker of BB#0, and please select 'finish'.
  4-2) If you want to suspend the maintenance without exchanging device,
       please select 'cancel'.
[f:finish|c:cancel] :f
```

The following is displayed. Wait until the processing is complete.

```
Waiting for BB#0 to enter install state.
[This operation may take up to 20 minute(s)]
(progress scale reported in seconds)
   0.....  30.. done
Waiting for BB#0 to enter ready state.
[This operation may take up to 45 minute(s)]
(progress scale reported in seconds)
   0.....  30.....  60..... done
```

2. **After confirming that the FRU to be diagnosed is displayed, enter "s".**

```
Do you want to start to diagnose BB#0?[s:start|c:cancel] :s
```

3. **After confirming again that the FRU to be diagnosed is displayed, enter "y".**

```
Diagnostic tests for BB#0 have started.
Initial diagnosis is about to start, Continue?[y|n] :y
```

The following is displayed. Wait until the processing is complete.

```
SB#00-0 power on sequence started.
  0..... 30..... 60....end
Initial diagnosis started. [1800sec]
  0..... 30..... 60..... 90.....120.....150.....180.....210.....240.....|
270.....300.....330.....360..end
Initial diagnosis has completed.
SB power off sequence started. [1200sec]
  0..... 30..... 60..... 90.....120....end
SB powered off.
PSB  Test    Fault
---- ------- --------
00-0 Passed  Normal
done
```

4. **Confirm that the status is normal ("Normal") after diagnosis, and then enter "f".**

```
--------------------------------------------------------------------------------
Maintenance/Replacement Menu
Status of the replaced FRU.

FRU                 Status
------------------- --------------
/BB#0               Normal
--------------------------------------------------------------------------------
The replacement of BB#0 has completed normally.[f:finish] :f
```

5. **When the maintenance menu appears, enter "c" to exit the operation.**

```
------------------------------------------------------------------------------
Maintenance/Replacement Menu
Please select a type of model which has FRU to be replaced.

1. BB          (4s Building Block Model)
2. XBBOX       (XB-BOX Model)
------------------------------------------------------------------------------
Select [1,2|c:cancel] :c
```

6.2 Incorporating a Chassis into a Physical Partition

This section describes the procedure for incorporating a chassis into a physical partition by using dynamic reconfiguration (DR) after FRU maintenance.

1. **Log in to the XSCF shell.**
2. **Execute the addboard command to incorporate the target chassis into the physical partition.**
   In response to the confirmation message, enter "y".

Note - When you incorporate a system board with the addboard command, the target system board is incorporated into the physical partition after its hardware diagnosis. Therefore, it may take time for the command execution to complete.

In the following example, PSB 01-0 is incorporated into PPAR-ID 0.

```
XSCF> addboard -c configure -p 0 01-0
PSB#01-0 will be configured into PPAR-ID 0. Continue?[y|n] :y
Start connecting PSB to PPAR. [3600sec]
0..... 30..... 60..... 90.....120.....150.....180.....210.....240.....
270.....300.....330.....360.....390.....420.....450.....480.....510.....
540.....570.....600.....630.....660.....690.....720.....750.....780.....
810.....840.....870.....900.....930.....960.....end
Connected PSB to PPAR.
Start configuring PSB to Logical Domains (LDoms) Manager. [1800sec]
0.....end
Configured PSB to Logical Domains (LDoms) Manager.
Operation has completed.
```

3. **Execute the showresult command to check the end status of the addboard command that was just executed.**
   The following example shows that "0" is returned as the end status and the execution of the addboard command has been completed successfully.

```
XSCF> showresult
0
```

4. **Execute the showboards command to confirm that the target chassis has been incorporated into the physical partition.**
   The BB-ID of the chassis requiring maintenance is indicated by the system board (PSB) number.

   In the following example, [Fault] of PSB 01-0 displays "Normal", which indicates that the system board is operating normally.

```
XSCF> showboards -a
PSB  PPAR-ID(LSB) Assignment  Pwr  Conn Conf Test    Fault
---- ------------ ----------- ---- ---- ---- ------- --------
00-0 00(00)       Assigned    y    y    y    Passed  Normal
01-0 00(01)       Assigned    y    y    y    Passed  Normal
```

5. **If you performed maintenance on a PCIe card using dynamic reconfiguration (DR), restore the devices that were released before the maintenance to their original configurations.**
   Reassign the devices that were released from the root domain and I/O domains.

```
# ldm add-io PCIE8 domain01
# ldm add-io PCIE9 domain01
# ldm add-io PCIE10 domain01
# ldm add-io PCIE11 domain01
# ldm remove-io /BB1/PCI0 domain01 (*1)
# ldm add-io /BB1/PCI0 iodomain (*1)
```

   *1: PCIe slots are automatically assigned to the root domain. Therefore, to reassign them to I/O domains, they must be released and then reassigned.

6. **Start the root domain and I/O domains.**
   If a virtual service is provided, the virtual service is automatically restarted.

Note - Start the root domain first, and then start I/O domains.

```
# ldm start-domain domain01
# ldm start-domain iodomain
```

7. **If there is a guest domain that uses a virtual device, log in to the guest domain to restart the use of the device or incorporate it into the duplication function again.**

6.3 Powering On the Physical Partition Requiring Maintenance

This section describes the procedure for powering on a physical partition requiring maintenance.

1. **Switch the mode switches of the master chassis and those chassis whose XSCFs are in the standby state to Locked mode.**
   - **For a building block configuration (without crossbar box)**
     Switch the mode switches of BB-ID#00 and #01 to Locked mode.
   - **For a building block configuration (with crossbar box)**
     Switch the mode switches of BB-ID#80 and #81 to Locked mode.
2. **Log in to the XSCF shell.**
3. **Execute the showstatus command to confirm that there is no problem with the FRU after the completion of maintenance.**
   If there is no problem, nothing is displayed.

```
XSCF> showstatus
```

4. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
SPARC M10-4S;
    + Serial:2081235006; Operator_Panel_Switch:Locked;
    + System_Power:Off; System_Phase:Cabinet Power Off;
    Partition#0 PPAR_Status:Powered Off;
    BB#00 Status:Normal; Role:Master; Ver:2047h; Serial:2081235006;
        + FRU-Part-Number:CA07361-D202 A1                        ;
        + Power_Supply_System: ;
        + Memory_Size:160 GB;
-----------------------Ommitted-----------------------
    BB#01 Status:Normal; Role:Standby; Ver:2047h; Serial:2081228004;
        + FRU-Part-Number:CA07361-D202 A0                        ;
        + Power_Supply_System: ;
        + Memory_Size:128 GB;
-----------------------Ommitted-----------------------
```

5. **If the state of the master chassis requiring maintenance has been switched to the standby state before maintenance, execute the switchscf command to switch the chassis to the master XSCF.**

```
XSCF> switchscf -t Standby
```

6. **Execute the poweron command to power on the stopped physical partition.**

Enter the PPAR-ID you noted in advance by using the showboards command.

In the following example, PPAR-ID 0 is specified.

```
XSCF> poweron -p 0
```

6.4 Starting the Entire System

This section describes the procedure for starting the entire system.
The system can be started in either of the following two ways:

- Starting the system with an XSCF command
- Starting the system from the operation panel

1. **Check that the XSCF STANDBY LED on the operation panel is on.**

Note - For a building block configuration, check the XSCF STANDBY LEDs of all the chassis constituting the system.

2. **Log in to the XSCF shell.**
3. **Switch the mode switch on the operation panel to Locked mode.**
   For details, see "2.2.2 Control function of the operation panel."

Note - For a building block configuration, switch the mode switches of the master chassis and those chassis whose XSCFs are in the standby state.

4. **Execute the showstatus command to confirm that there is no problem with the FRU after the completion of maintenance.**
   If there is no problem, nothing is displayed.

```
XSCF> showstatus
```

5. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
SPARC M10-4S;
    + Serial:2081229003; Operator_Panel_Switch:Service;
    + System_Power:On; System_Phase:Cabinet Power On;
    Partition#0 PPAR_Status:Running;
    BB#00 Status:Normal; Role:Master; Ver:2050h; Serial:2081229003;
        + FRU-Part-Number:CA07361-D202 A0                          ;
        + Power_Supply_System: ;
        + Memory_Size:320 GB;
```

```
------------------------Ommitted------------------------
        PCI#0 Status:Normal; Name_Property:pci;
            + Vendor-ID:108e; Device-ID:9020;
            + Subsystem_Vendor-ID:0000; Subsystem-ID:0000;
            + Model:;
            + Connection:7001;
            PCIBOX#7001; Status:Normal; Ver:1110h; Serial:2121237001;
                + FRU-Part-Number:;
                IOB Status:Normal; Serial:PP123403JE  ;
                    + FRU-Part-Number:CA20365-B66X 008AG                    ;

                LINKBOARD Status:Normal; Serial:PP1234026P  ;
                    + FRU-Part-Number:CA20365-B60X 001AA                    ;

                PCI#1 Name_Property:ethernet;
                    + Vendor-ID:1077; Device-ID:8000;
                    + Subsystem_Vendor-ID:1077; Subsystem-ID:017e;
                    + Model:;
------------------------Ommitted------------------------
```

For details, see "3.3.3 Checking the status of a component."

6. **Start the entire system.**
   For details, see "6.4.1 Starting the system with an XSCF command" or "6.4.2 Starting the system from the operation panel."

   After a short while, the following processes are performed.

   - The POWER LED on the operation panel will be turned on.
   - The power-on self-test (POST; self diagnosis when powering on) will be executed.

   Then, the system starts up. For details, see "6.1 Starting the System" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

6.4.1 Starting the system with an XSCF command

1. **Execute the poweron command.**
   In response to the confirmation message, enter "y".

```
XSCF> poweron -a
PPAR-IDs to power on:00,01
Continue? [y|n] :y
00 : Powering on
01 : Powering on
```

6.4.2 Starting the system from the operation panel

1. **Press the power switch on the operation panel for 1 second or more (less**

than 4 seconds).
For details, see "2.2.2 Control function of the operation panel."

Note - For a building block configuration, press the power switch on the master chassis. The power switches of the other chassis are disabled.

6.5 Restoring the Chassis

This section describes operations required to restore the chassis.

6.5.1 Installing the power cord

If the power cord of the SPARC M10-4S or the crossbar box was removed to perform the maintenance work, connect the power cord and then attach the cable clamp to the power cord.

1. **Connect the power cord of the SPARC M10-4S to the PSU backplane unit, or connect the power cord of the crossbar box to the power supply unit.**

Figure 6-1 Installing the power cord (SPARC M10-4/M10-4S)

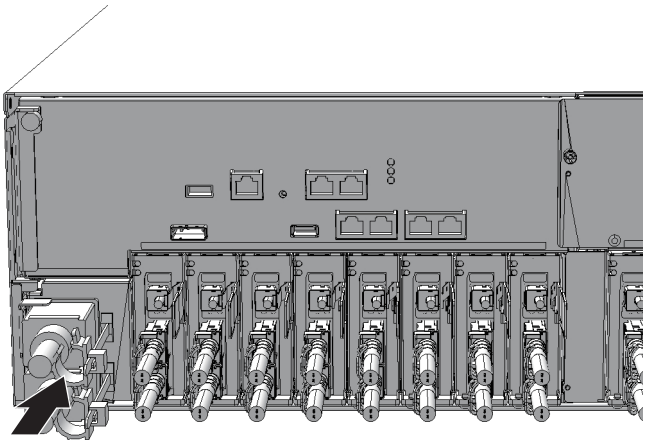
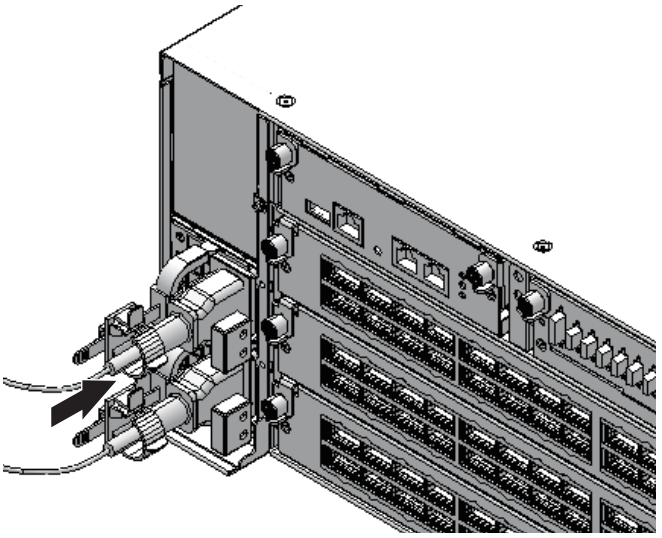


Figure 6-2 Installing the power cord (crossbar box)



2. **Clip the cable clamp around the power cord and then fix the cable clamp.**
The cable clamp is firmly fixed by locking the latch (A in the figure) and then pushing the cable clamp towards the front of the chassis.

Figure 6-3 Locking the cable clamp (SPARC M10-4/M10-4S)

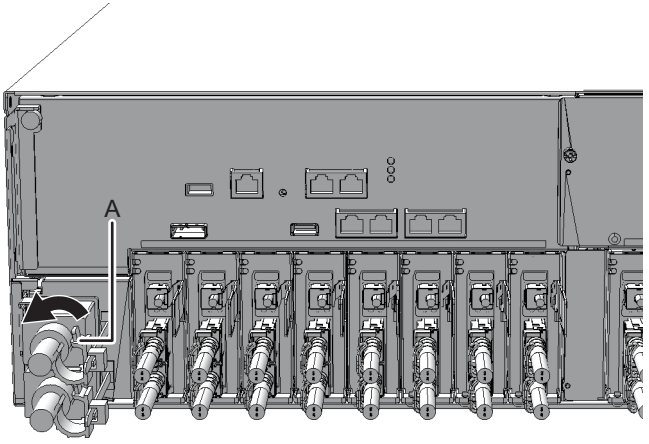
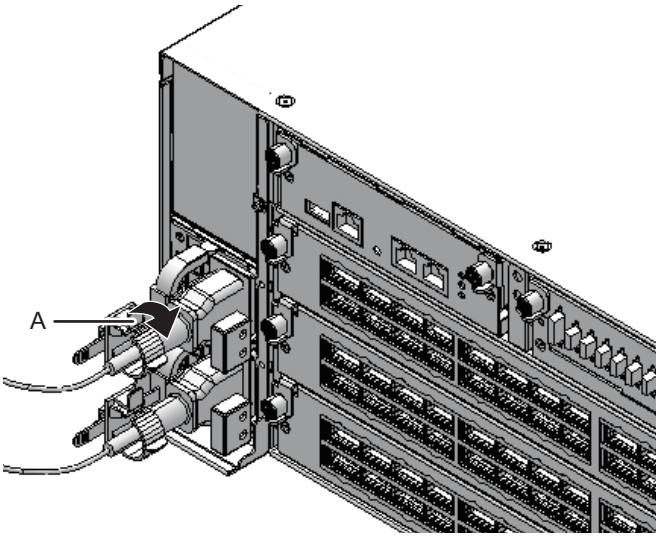


Figure 6-4 Locking the cable clamp (crossbar box)

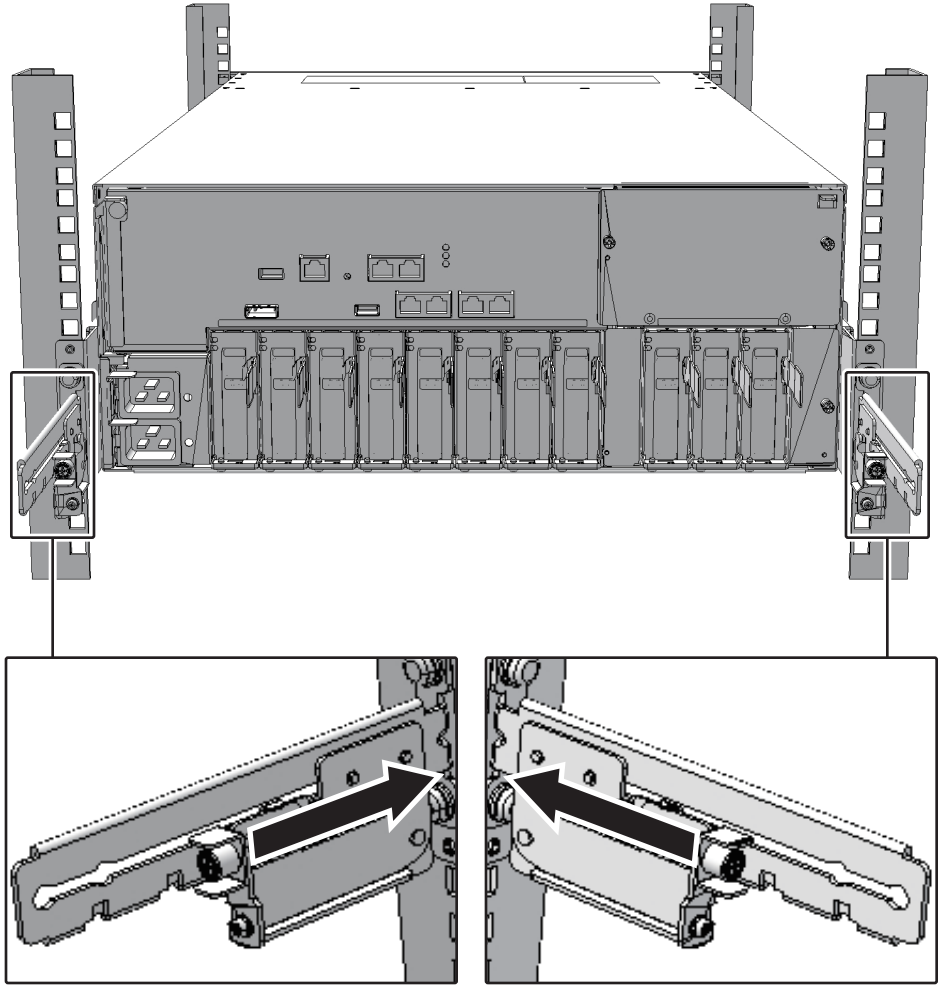


6.5.2 Fixing the cable support

After performing maintenance on a component at the rear of the SPARC M10-4/M10-4S, lift the cable support and fix it in place.

1. **Lift the cable support and lock it in place by pushing the upper and lower screw fittings towards the back (direction of the arrow).**

Figure 6-5 Locking the cable support



2. **Tighten the right and left screws to fix the cable support.**

Note - Check that the cable support is firmly attached and fixed.

6.5.3 Installing the front cover

If the front cover of the SPARC M10-4S or the crossbar box was removed to perform maintenance, install it after installing the components at the front of or inside the chassis.

1. **To install the front cover, insert the tabs of the front cover into the notches at**

the bottom front of the chassis.

Figure 6-6 Installing the front cover (SPARC M10-4/M10-4S)

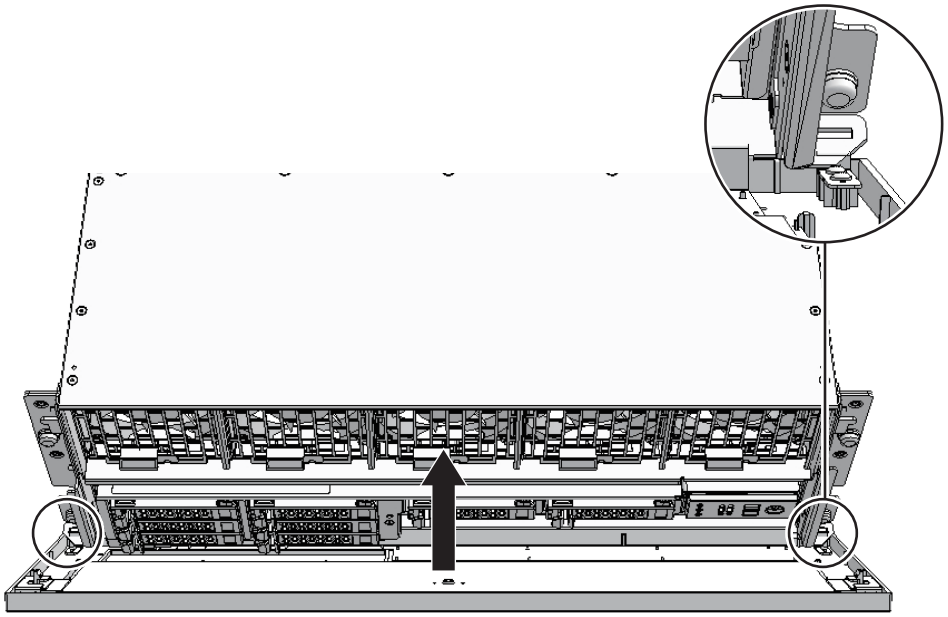
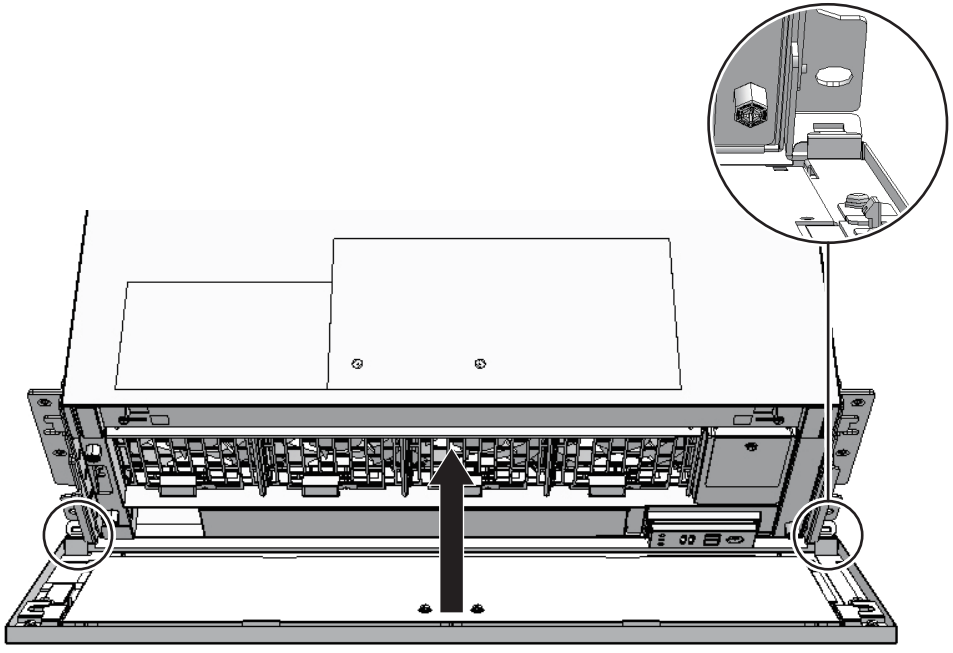


Figure 6-7 Installing the front cover (crossbar box)



Note - Check that the front cover is firmly attached and fixed.

Chapter 7

Maintaining the CPU Memory Units

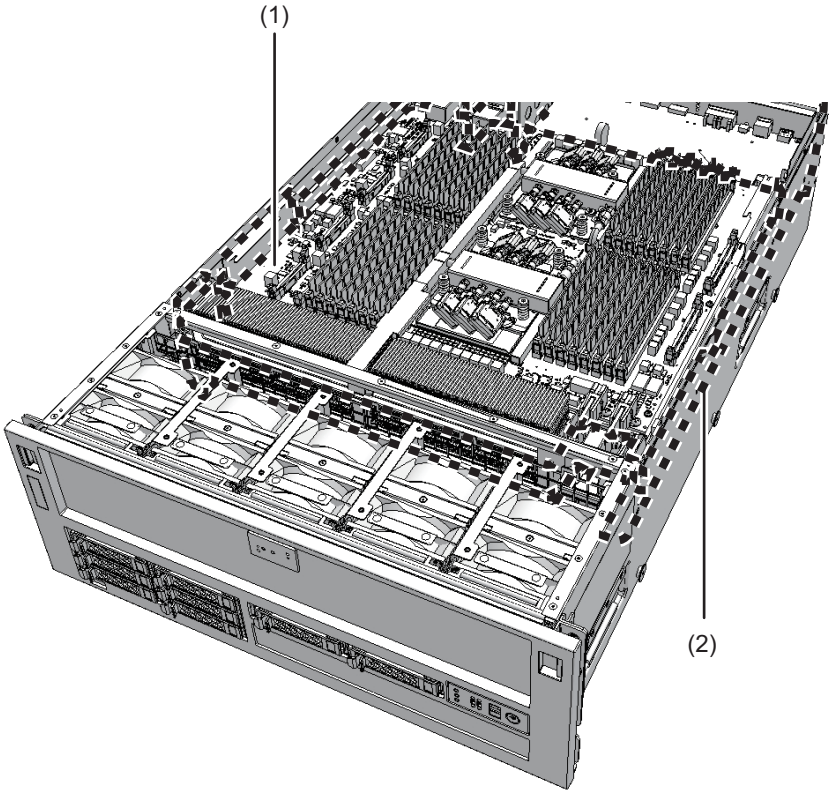
This chapter describes the procedure for maintaining the CPU memory unit mounted on the SPARC M10-4/M10-4S. The CPU memory unit lower can only be replaced. The CPU memory unit upper can be replaced, expanded, and reduced.

- Configuration of the CPU Memory Units
- Before Maintaining a CPU Memory Unit
- Enabling the Removal of a CPU Memory Unit
- Removing a CPU Memory Unit
- Installing a CPU Memory Unit
- Restoring the System

7.1 Configuration of the CPU Memory Units

This section describes the configuration and locations of the CPU memory units.
A CPU memory unit is composed of the following two parts: the CPU memory unit lower and the CPU memory unit upper.

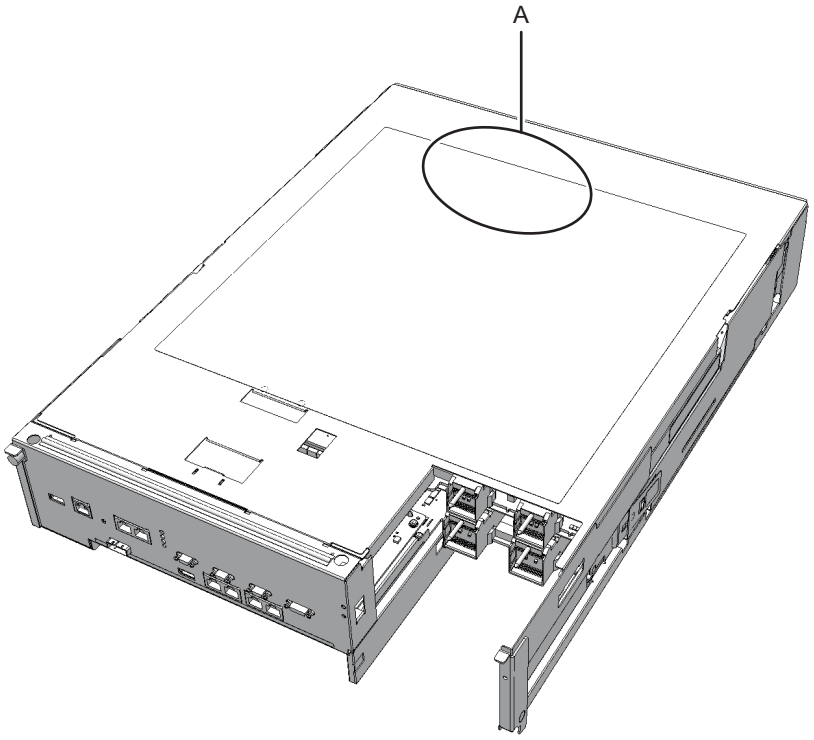
Figure 7-1 Location of CPU memory unit



Location number	Component
1	CPU memory unit lower (CMUU)
2	CPU memory unit upper (CMUL)

There are two types of CPU memory units: FRAME-A and FRAME-B. The type of a CPU memory unit can be determined from the indication on the label (A in the figure). If a CPU memory unit does not have the "FRAME-B" indication, it is a FRAME-A unit.

Figure 7-2 Type of CPU memory unit



7.2 Before Maintaining a CPU Memory Unit

This section describes the types and the flow of maintenance of the CPU memory units, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

7.2.1 Types of maintenance

Table 7-1 lists the types of maintenance for the CPU memory units. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 7-1 Type of maintenance for CPU memory unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped
Single-chassis configuration	Unsupported	Unsupported	Unsupported	Supported	Supported
Building block configuration	Unsupported	Supported (*2)	Unsupported	Supported	Supported

*1: For a single-chassis configuration, the inactive/cold maintenance procedure is the same as that for stopping the system, therefore see the procedure for system-stopped maintenance.
*2: It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition.

7.2.2 Maintenance flow

Table 7-2 lists the sequence of the maintenance procedure for the CPU memory units. To expand/reduce the CPU memory unit upper, it is necessary to remove/install the CPU memory unit lower.
The procedure for expanding a CPU memory unit upper is the same as that for installing a CPU memory unit upper. The procedure for reducing a CPU memory unit upper is the same as that for removing a CPU memory unit upper.
In addition, the CPU memory unit upper and CPU memory unit lower are connected by the PCI Express (PCIe) cable. The PCIe cable should be replaced when the CPU memory unit upper is replaced. Similarly, the cable is installed when the CPU memory unit upper is expanded, and removed when it is reduced.

Table 7-2 Maintenance flow

Task		Lower unit replacement	Upper unit replacement	Upper unit expansion	Upper unit reduction
1	Preparation	7.3	7.3	7.3	7.3
2	Accessing a CPU memory unit	7.4.1	7.4.1	7.4.1	7.4.1
3	Removing a CPU memory unit lower	7.4.2	7.4.2	7.4.2	7.4.2
4	Removing a CPU memory unit upper	7.4.3	7.4.3	- (*)	7.4.3
5	Removing a PCIe cable	7.4.4	-	7.4.4	7.4.4
6	Installing a PCIe cable	7.5.1	-	7.5.1	7.5.1
7	Installing a CPU memory unit upper	7.5.2	7.5.2	7.5.2	- (*)
8	Installing a CPU memory unit lower	7.5.3	7.5.3	7.5.3	7.5.3
9	Restoring the chassis	7.5.4	7.5.4	7.5.4	7.5.4
10	Restoring the system	7.6	7.6	7.6	7.6

* It is necessary to remove or install a filler unit.

7.2.3 Precautions for replacement

Note the following points when you replace a CPU memory unit:

- Do not replace a CPU memory unit at the same time as the PSU backplane unit. If you replace both a CPU memory unit and the PSU backplane unit at the same time, the system will fail to operate normally. Replace the CPU memory unit or PSU backplane unit, and then confirm that the newly installed part operates normally by executing the showhardconf or showstatus command. Then, replace the other Field Replaceable Units (FRUs).
- When replacing the CPU memory unit, memory modules should be removed from the old unit and remounted in the new one. Mount the new unit in the same position as the old unit.
- The weight of the CPU memory unit is 17 kg (37.4 lb). Maintenance must be done by two people if the CPU memory unit is mounted at the 24 or higher U of the rack. If you attempt to perform the maintenance work alone, you may injure yourself or cause damage to the chassis.
- For both the CPU memory unit upper and CPU memory unit lower, there are eight types based on the combinations of CPU type and the number of memory slots. Each type of CPU memory unit, both upper and lower, can be used in combination with one another.
- Before replacing the CPU memory unit lower, execute the dumpconfig command to save the system setting information. When the CPU memory unit lower is replaced, the CPU Activation setting information and CPU Activation keys may be deleted. To restore the CPU Activation setting information and CPU Activation keys that have been saved with the dumpconfig command, execute the restoreconfig command.
- The XCP firmware version must be the same before and after replacement of the CPU memory unit lower. For checking the version, see "4.2.2 Confirming the software and firmware configurations."

7.2.4 Precautions for installation

Note the following points when you expand a CPU memory unit upper:

- You need to add four PCIe cables when connecting the CPU memory unit upper to the CPU memory unit lower.
- The 2-CPU configuration of the SPARC M10-4/M10-4S has four root complexes, and the 4-CPU configuration can have four, seven or eight root complexes. If you change a 2-CPU configuration into a 4-CPU configuration by adding CPU memory units on site, Fujitsu recommends a configuration with four root complexes. This configuration inherits the configuration and mounting rules of the I/O bus of the 2-CPU configuration. Adopting a configuration with seven or eight root complexes increases the maximum number of mounted PCIe cards. However, since the I/O bus is reconfigured, the physical partition needs to be reconfigured.

A root complex consists of an I/O controller on a processor, PCI switches, and PCI devices under the I/O controller.

- For SPARC M10-4/M10-4S with two CPUs installed, if a CPU memory unit is expanded in order to add two CPUs when the I/O bus reconfiguration is "enabled", it will change the device paths of the I/O devices that have been used. Before adding the memory unit, execute the setpparmode command by specifying "false" for ioreconfigure with the -m function=mode option to "disable" the I/O bus reconfiguration function.

7.2.5 Precautions for removal

Note the following points when you reduce a CPU memory unit upper:

- You must also reduce the four PCIe cables for connecting the CPU memory unit upper with the CPU memory unit lower.
- If a CPU memory unit is diminished to remove two CPUs, it will eliminate the root complexes for the two CPUs in use up to then, making some PCIe slots unavailable. To make the PCIe slots available, execute the setpparmode command by specifying "true" or "nextboot" for ioreconfigure with the -m function=mode option to "enable" the I/O bus reconfiguration function. Since the I/O bus is reconfigured, the physical partition must also be reconfigured.

7.3 Enabling the Removal of a CPU Memory Unit

This section describes the preparations that must be completed prior to removing a CPU memory unit. The preparation procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

7.3.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Release the chassis, in which the CPU memory unit requiring maintenance is mounted, from the physical partition.**
For details, see "5.2 Releasing a Chassis from the Physical Partition."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

7.3.2 Inactive/Cold maintenance

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

Note - When you add or remove CPU memory units, confirm that no error has occurred.

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

7.3.3 System-stopped maintenance

Note - When the CPU memory unit lower is replaced, all of the XSCF setting information may be lost. Perform this operation only after backing up the XSCF setting information.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the dumpconfig command to backup the XSCF setting information only when replacing the CPU memory unit lower in a singe-chassis configuration.**
   For details, see "10.9.2 Saving XSCF setting information" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

If you are not replacing the CPU memory unit lower, backup is not necessary. Proceed to step 4.

```
XSCF> dumpconfig
```

4. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

Note - When you add or remove CPU memory units, confirm that no error has occurred.

5. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
6. **Stop the entire system.**
For details, see "5.4 Stopping the Entire System."
7. **Execute the replacefru command to release the chassis requiring maintenance from the system.**
For a single-chassis configuration, you do not have to release the chassis. Proceed to step 8.

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."
8. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

7.4 Removing a CPU Memory Unit

This section describes the procedure for removing a CPU memory unit. Remove the CPU memory unit lower first, then remove the CPU memory unit upper. Enable the removal of the CPU memory unit before attempting to remove it. For details, see "7.3 Enabling the Removal of a CPU Memory Unit."
Unless otherwise specified, the figures explained in this section use the SPARC

M10-4S with a FRAME-A CPU memory unit.

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

7.4.1 Accessing a CPU memory unit

1. **Remove the crossbar cables from the cable support.**
   Perform this procedure only when using equipment rack model 26xx or equipment rack model 16xx. The procedure may vary depending on the model of the equipment rack.

   If you are not using equipment rack model 26xx or equipment rack model 16xx, proceed on to step 2.

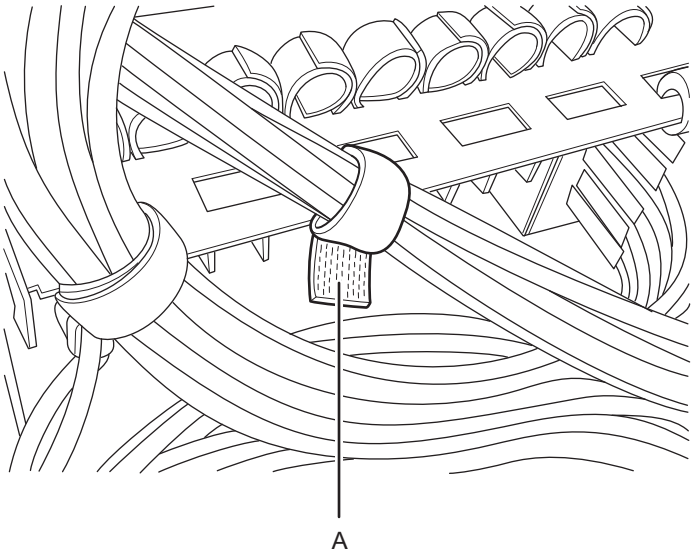
   Procedure when equipment rack model 26xx is used

   a. **Remove all the crossbar cables from the crossbar unit.**

Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.

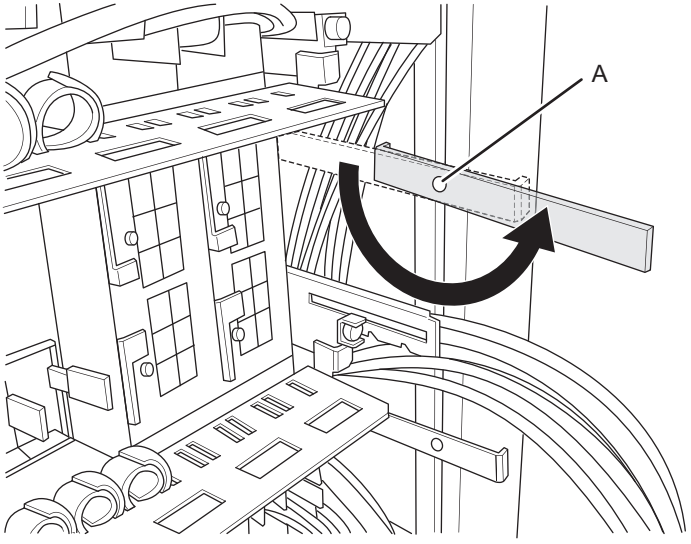
   b. **Remove the hook-and-loop fastener of the cable support (A in the figure) to which the crossbar cables are fixed.**

Figure 7-3 Hook-and-loop fastener of the cable support



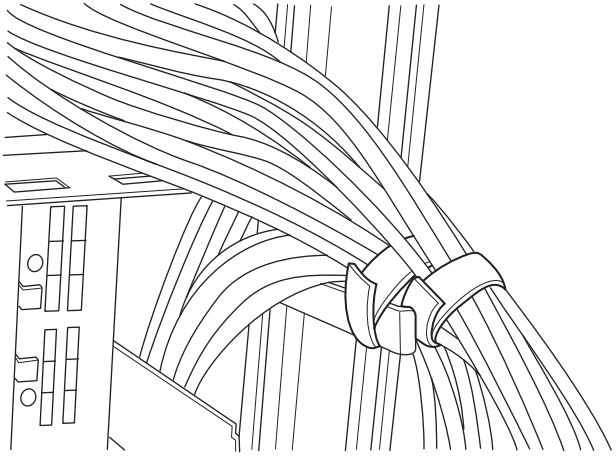
c. **Remove the screw securing the cable holder (A in the figure) that is fixed to the supporting column on the rear of the rack, and then install the cable holder by rotating it 180 degrees.**

Figure 7-4 Cable holder screw



d. **Use the hook-and-loop fastener to fix the crossbar cables to the cable holder.**

Figure 7-5 Fixing crossbar cables



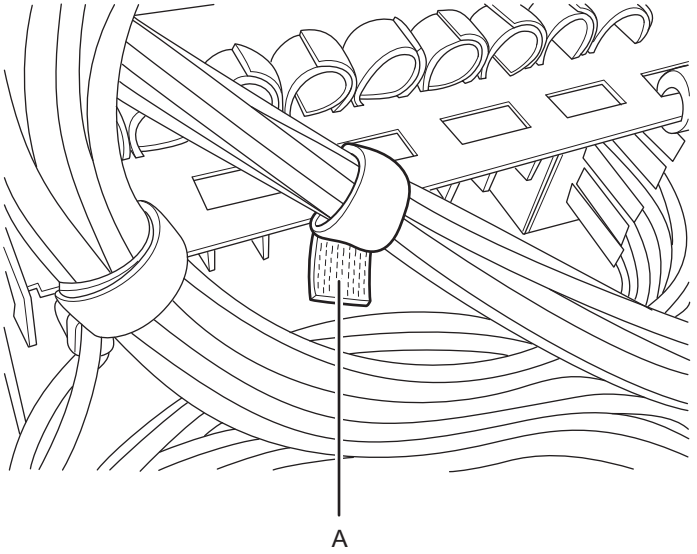
Procedure when equipment rack model 16xx is used

a. **Remove all the crossbar cables from the crossbar unit.**

Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.

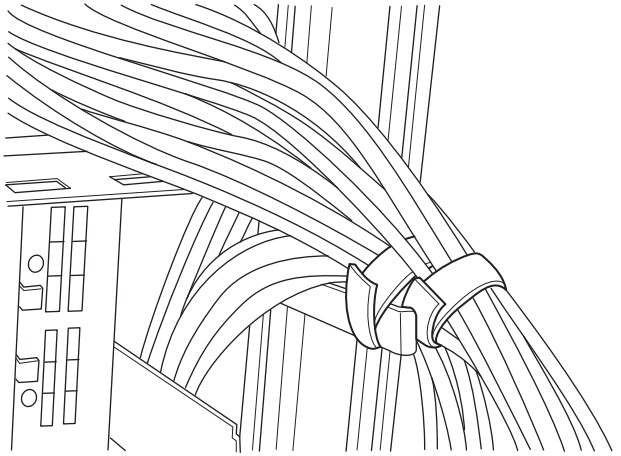
b. **Remove the hook-and-loop fastener of the cable support (A in the figure) to which the crossbar cables are fixed.**

Figure 7-6 Hook-and-loop fastener of the cable support



c. **Use the hook-and-loop fastener to fix the crossbar cables to the cable holder installed on the supporting column on the rear of the rack.**

Figure 7-7 Fixing crossbar cables



2. **Lower the cable support.**
For details, see "5.5.1 Lowering the cable support."

3. **Remove all the cables connected to the external interface on the rear of the chassis.**
   The cables to be removed are as follows.
   - Interface cable connected to the PCI Express (PCIe) card
   - Crossbar cables (They may have been removed in step 1.)
   - XSCF BB control cable
   - XSCF DUAL control cable
   - XSCF-LAN cable
   - Serial cable
   - LAN cable
   - SAS cable
   - USB cable

Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.

---

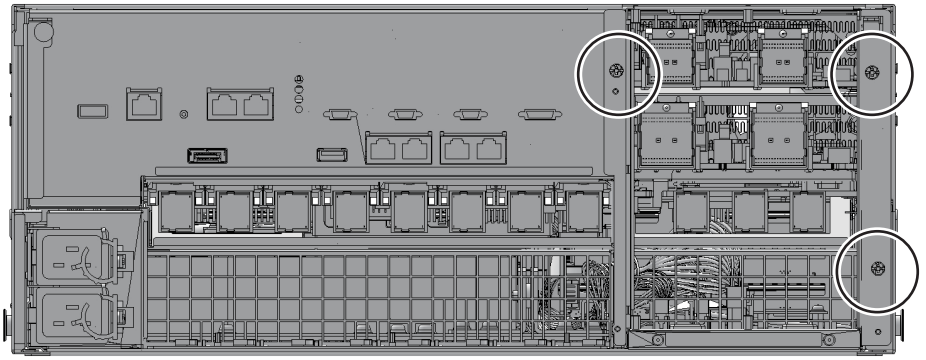
4. **Remove all the PCIe card cassettes.**
   For details, see "13.5.2 Removing a PCI Express card cassette."

Note - Make a note of the positions of the PCIe card cassettes before removing them to ensure that they are reinstalled correctly.

---

5. **If any crossbar units are mounted, remove them.**
   For details, see "9.4.2 Removing a crossbar unit."
6. **Loosen the three screws holding the mounting frame and then remove it.**

Figure 7-8 Screws securing the mounting frame



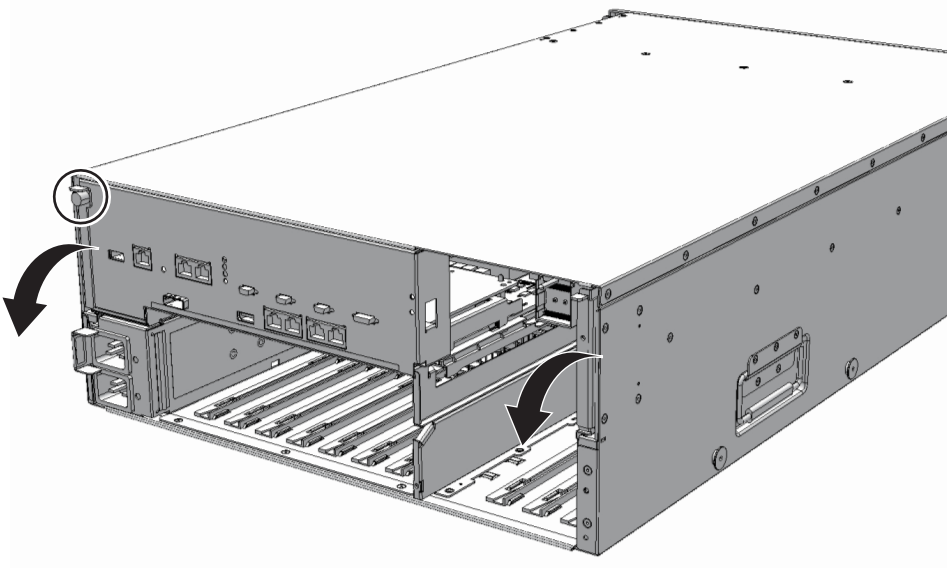
7.4.2 Removing the CPU memory unit lower

This section describes the procedure for removing a CPU memory unit lower.

Note - To expand or reduce a CPU memory unit upper, it is first necessary to remove the CPU memory unit lower.

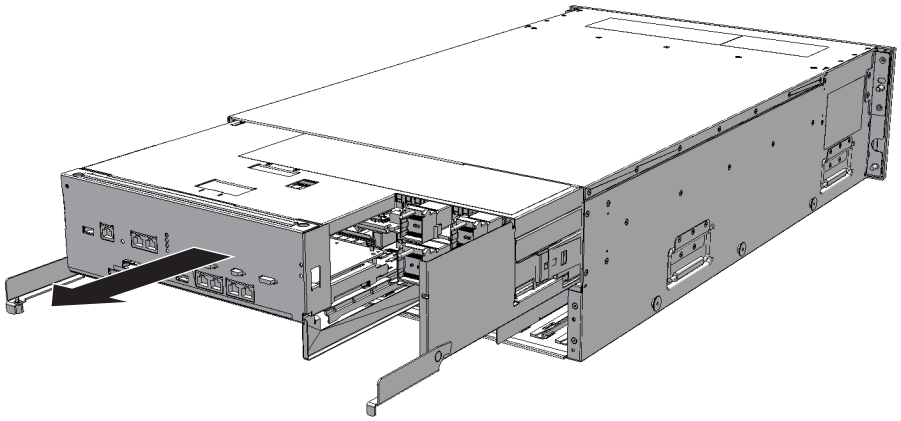
1. **Loosen the screws securing the levers of the CPU memory unit lower (rear left side) and then lower the right and left levers of the CPU memory unit lower to the horizontal position.**

Figure 7-9 Position of the screws and the levers of the CPU memory unit lower



2. **Hold the right and left levers of the CPU memory unit lower and pull out the CPU memory unit lower about 10 cm (3.9 in.)**

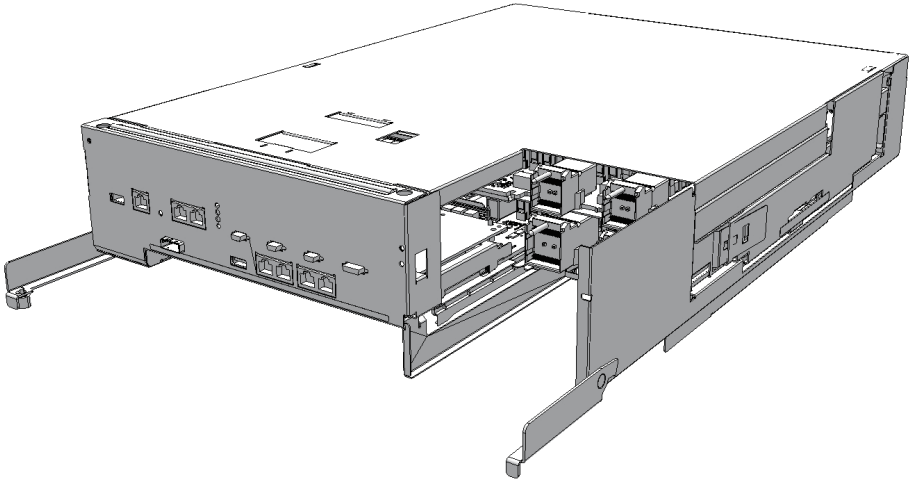
Figure 7-10 Pulling out CPU memory unit lower



3. **Remove the CPU memory unit lower while supporting it from below with one hand.**

Note - Place the removed CPU memory unit lower on a grounded antistatic ESD mat.
Note - Be careful not to damage the right and left levers when placing the CPU memory unit on the ESD mat.

Figure 7-11 Removing the CPU memory unit lower



4. **Remove the CPU memory unit upper or the filler unit for the CPU memory unit upper.**
   For details, see "7.4.3 Removing the CPU memory unit upper."

   You can expand the CPU memory unit upper by performing the above steps. You do not have to perform step 5.

5. **Remove the memory modules from the CPU memory unit lower and install them in the new CPU memory unit lower.**
   For details, see "8.5 Removing Memory" and "8.6 Installing Memory."

Note - Mount the memory in the same position as it was mounted in the removed CPU memory unit lower.

7.4.3 Removing the CPU memory unit upper

Removal of a CPU memory unit upper is performed after removal of the CPU memory unit lower. Perform reduction using the same procedure. You can remove a filler unit by performing the procedure up to step 9.

Note - This work should all be performed from the rear of the rack.

---

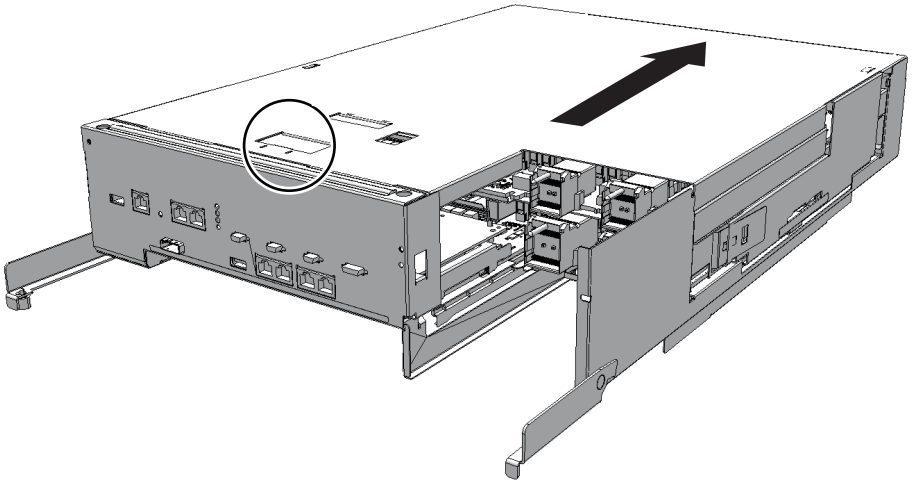
1. **Remove the CPU memory unit lower.**
   For details, see "7.4.2 Removing the CPU memory unit lower."

Note - Place the removed CPU memory unit lower on a grounded antistatic ESD mat.

---

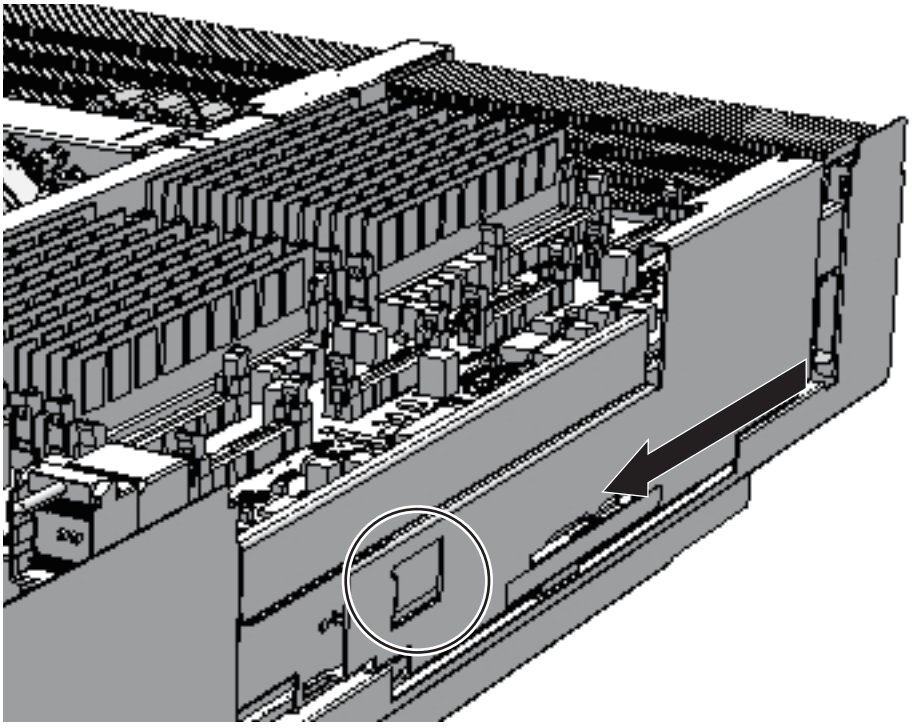
2. **Unlock (push) the top cover of the CPU memory unit and remove the cover by sliding it in the direction of the arrow.**

Figure 7-12 Releasing the lock



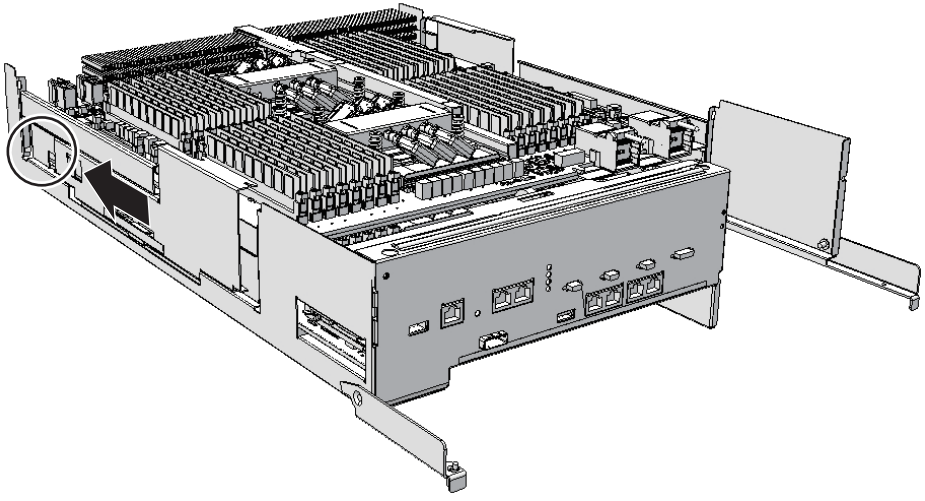
3. **Unlock (push) the right-side guide and remove it by sliding it in the direction of the arrow.**

Figure 7-13 Removing right-side guide



4. **Unlock (push) the left-side guide (when viewed from the rear) and remove it by sliding it in the direction of the arrow.**

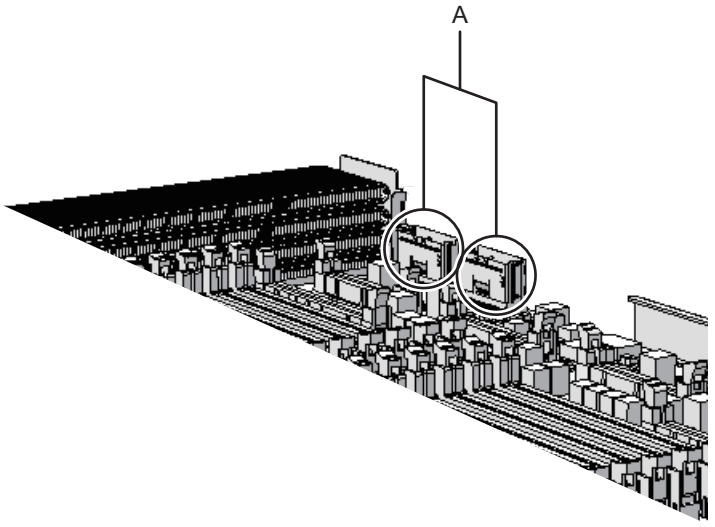
Figure 7-14 Removing left-side guide



5. **Remove the two PCIe cables (A in the figure) on the right side that connect**

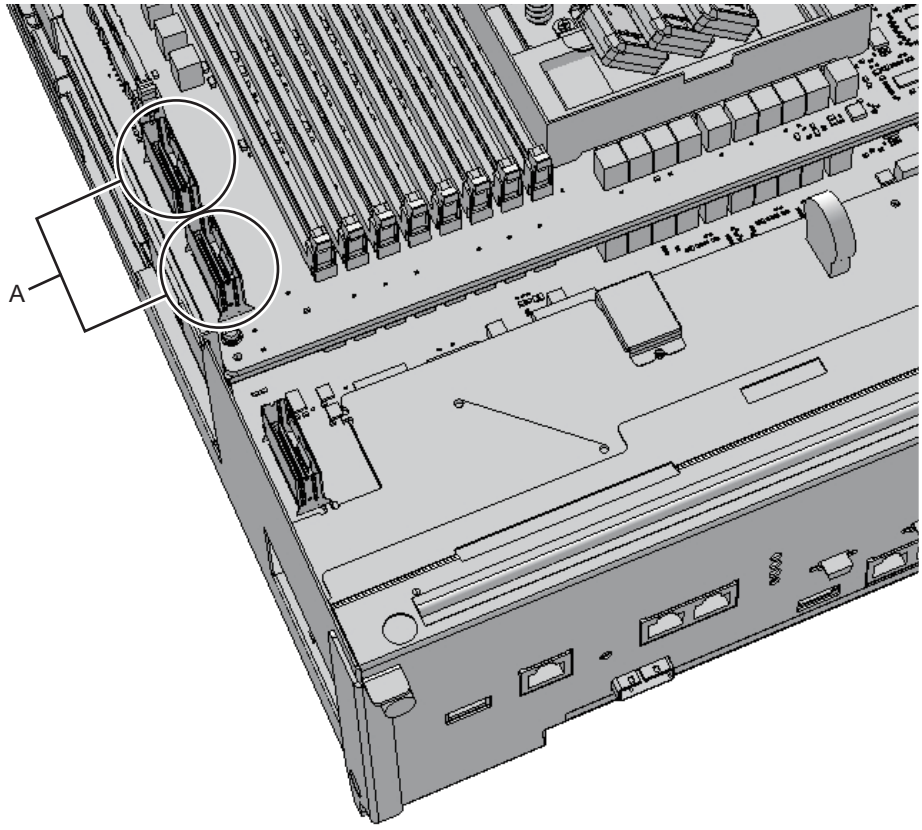
the CPU memory units upper and lower, from the CPU memory unit upper.
In the case of a filler unit, you can omit this step because PCIe cables are not present.

Figure 7-15 Removing the right-side PCIe cables



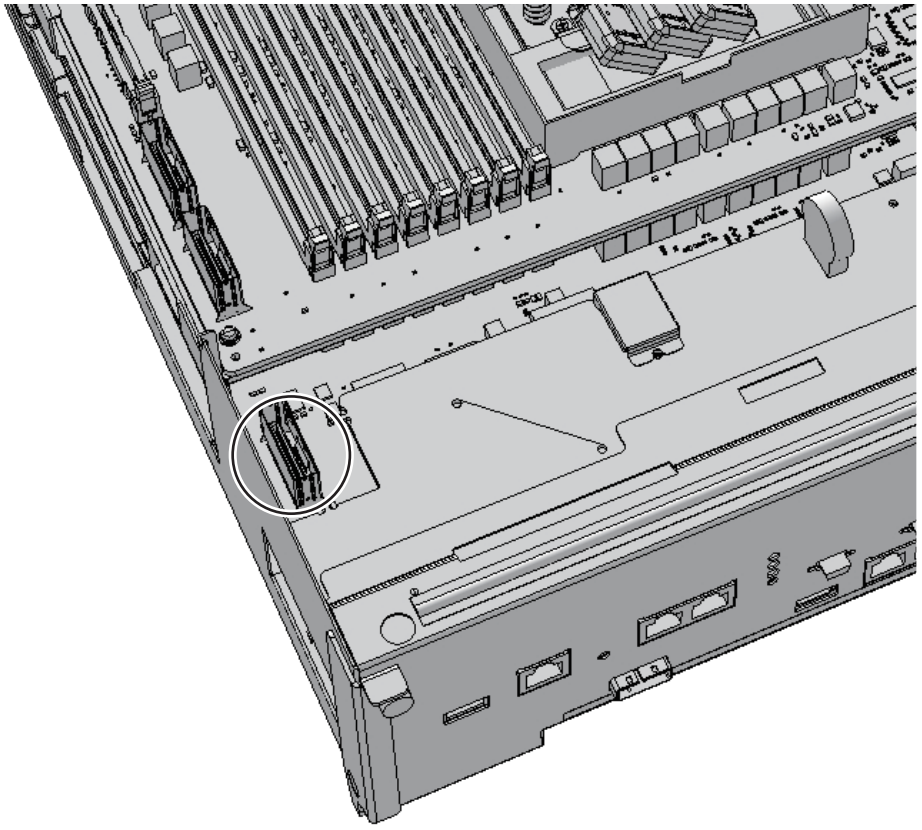
6. **Remove the two PCIe cables (A in the figure) on the left side that connect the CPU memory units upper and lower, from the CPU memory unit upper.**
In the case of a filler unit, you can omit this step because PCIe cables are not present.

Figure 7-16 Removing the left-side cables



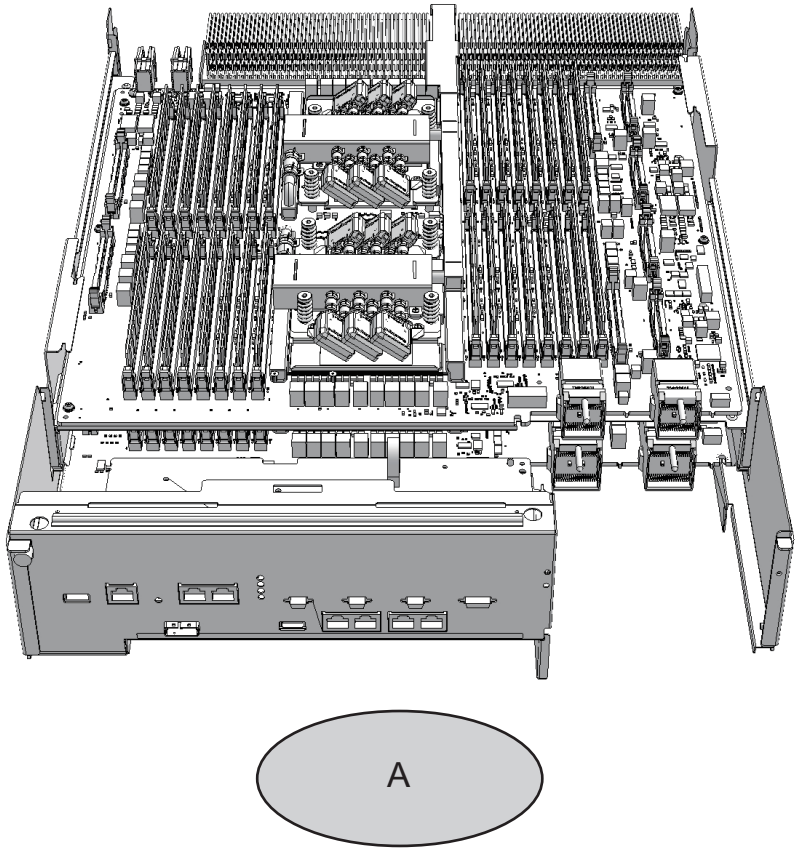
7. **Of the two PCIe cables on the left side, also remove the rear one from the CPU memory unit lower, as it is short.**
   In the case of a filler unit, you can omit this step because PCIe cables are not present.

Figure 7-17 Removing the PCIe cable from the left side rear



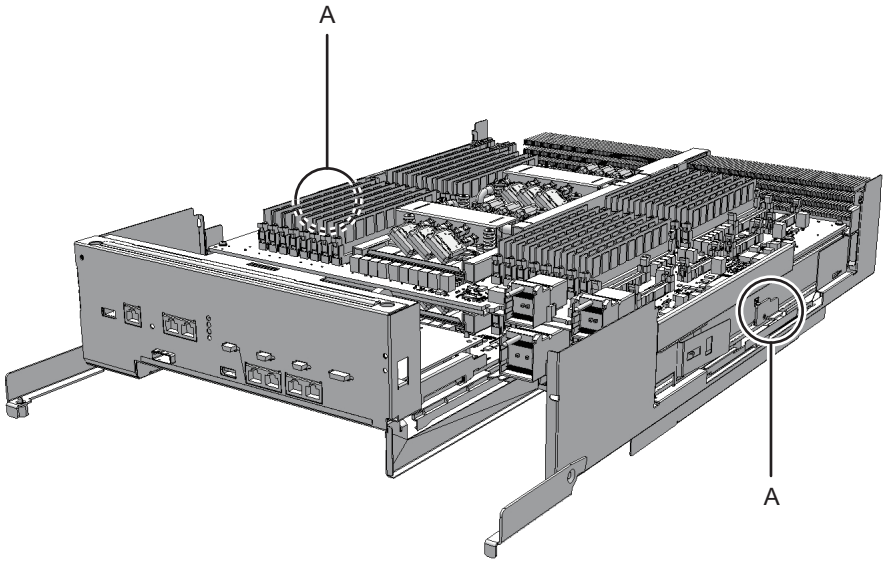
Perform the following work from the rear side of the chassis. Figure 7-18 shows the standing position (A in the figure) of a field engineer.

Figure 7-18 Standing position of a field engineer



8. **Raise the levers (A in the figure) on the right and left sides to release the CPU memory unit upper.**

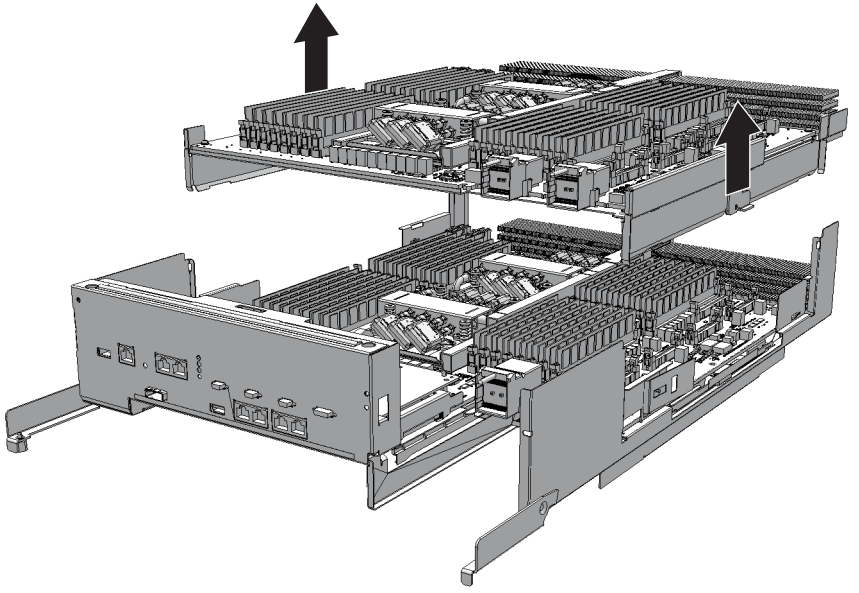
Figure 7-19 Positions of right and left levers



9. **While holding the levers, slightly lift the CPU memory unit upper.**
10. **Lift the CPU memory unit upwards and then remove it carefully.**

Note - Place the removed CPU memory unit upper on a grounded antistatic ESD mat.

Figure 7-20 Removing CPU memory unit upper



11. **Remove the memory modules from the removed CPU memory unit upper and then install them in the new CPU memory unit upper.**
    For details, see "8.5 Removing Memory" and "8.6 Installing Memory."

Note - Mount the memory in the same position as it was mounted in the removed CPU memory unit upper.

7.4.4 Removing a PCI Express cable

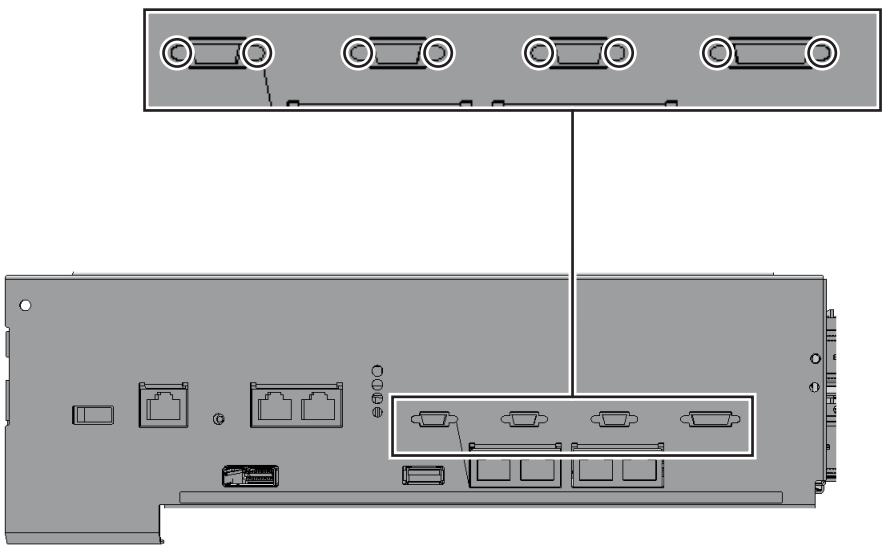
Note - A part of the procedure varies depending on the CPU memory unit type. To determine the CPU memory unit type, check the label in Figure 7-2.

When reducing a CPU memory unit upper or when replacing a PCIe cable, remove the PCIe cable. You can expand a CPU memory unit upper by performing the above procedure up to step 9.
For the SPARC M10-4 with a FRAME-A CPU memory unit and the SPARC M10-4S with a FRAME-B CPU memory unit, perform the procedure from step 2.

1. **Remove the eight screws at both ends of the XSCF cable connection port on the rear of the CPU memory unit lower.**
   Use a flathead screwdriver (small) to remove them.

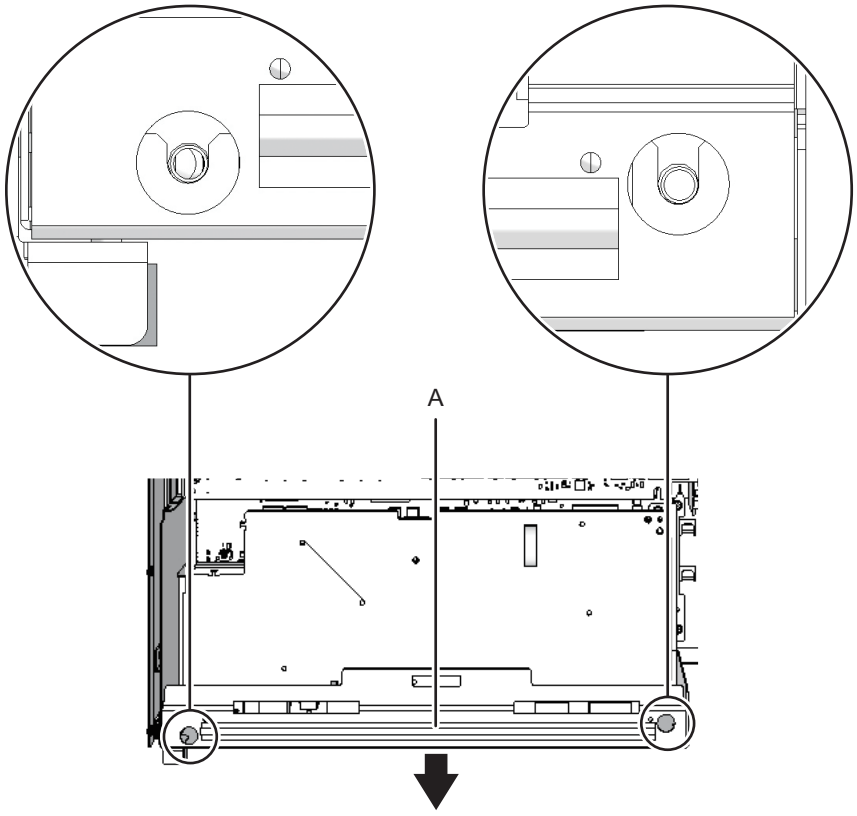
   For the SPARC M10-4 with a FRAME-A CPU memory unit and the SPARC M10-4S with a FRAME-B CPU memory unit, this step is not necessary.

Figure 7-21 Screws for both ends of the XSCF cable connection ports (for the SPARC M10-4S with a FRAME-A CPU memory unit)



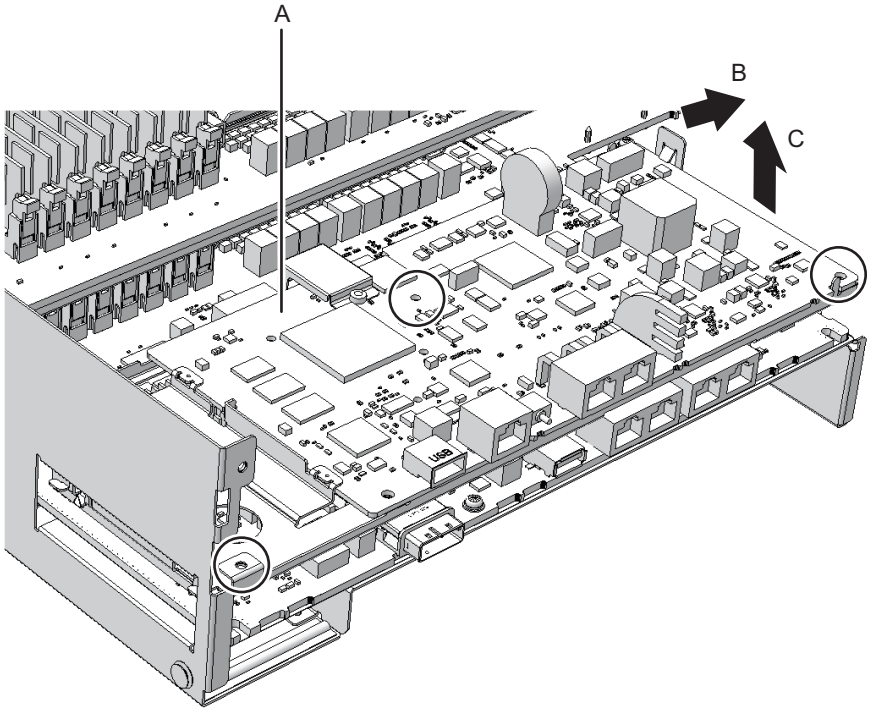
2. **Loosen the two screws holding the upper rear side of the CPU memory unit lower. Then, remove the rear cover (A in the figure) by pulling it in the direction of the arrow.**

Figure 7-22 Removing the rear cover



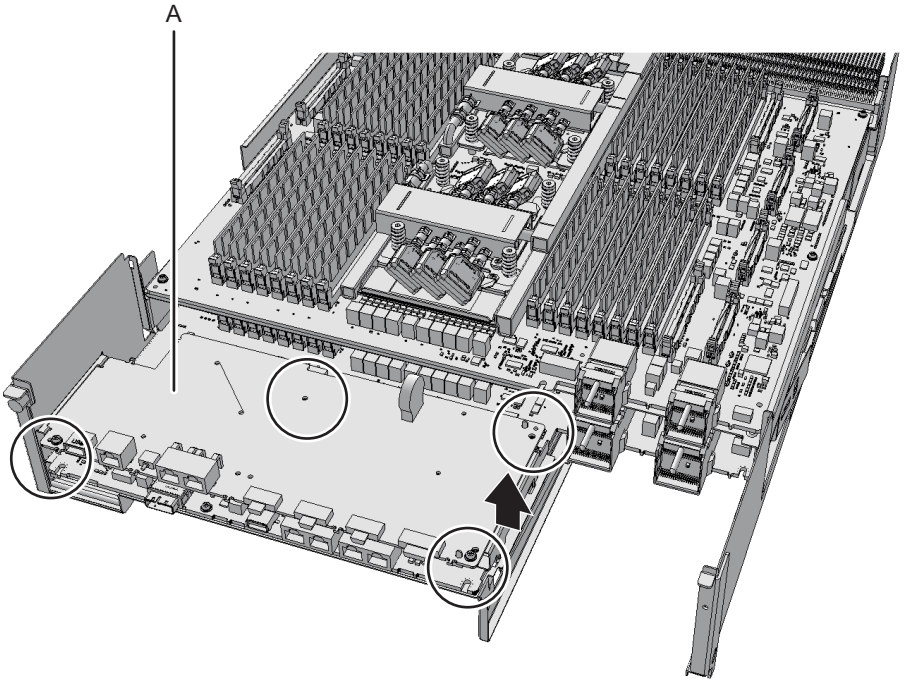
3. **Remove the XSCF board.**
   - **For the SPARC M10-4 with a FRAME-A CPU memory unit**
     Remove the three screws fixing the XSCF board (A in the figure) and rear cover. Tilt the right lever of the XSCF mount with your fingers about 5 mm (0.2 in.) to the right (B in the figure). Lift up the right side of the XSCF board and release the connection of the connector (C in the figure).

Figure 7-23 Releasing a connected XSCF board (for SPARC M10-4 with a FRAME-A CPU memory unit)



- **For the SPARC M10-4S with a FRAME-A CPU memory unit**
  Remove the four screws fixing the XSCF board (A in the figure). Then, lift the right side of the XSCF board to release the connector.

Figure 7-24 Releasing a connected XSCF board (for the SPARC M10-4S with a FRAME-A CPU memory unit)



4. **Pull out the XSCF board diagonally to the right (arrow).**

Note - Place the removed XSCF board on a grounded antistatic ESD mat.

Figure 7-25 Pulling out an XSCF board (for the SPARC M10-4 with a FRAME-A CPU memory unit)

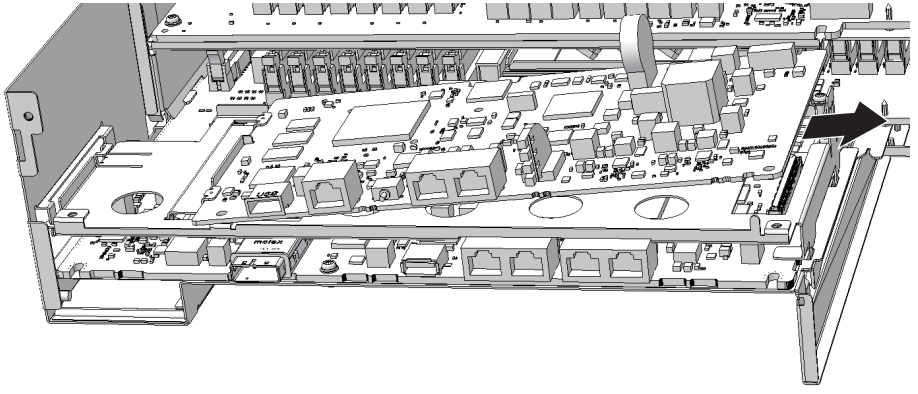
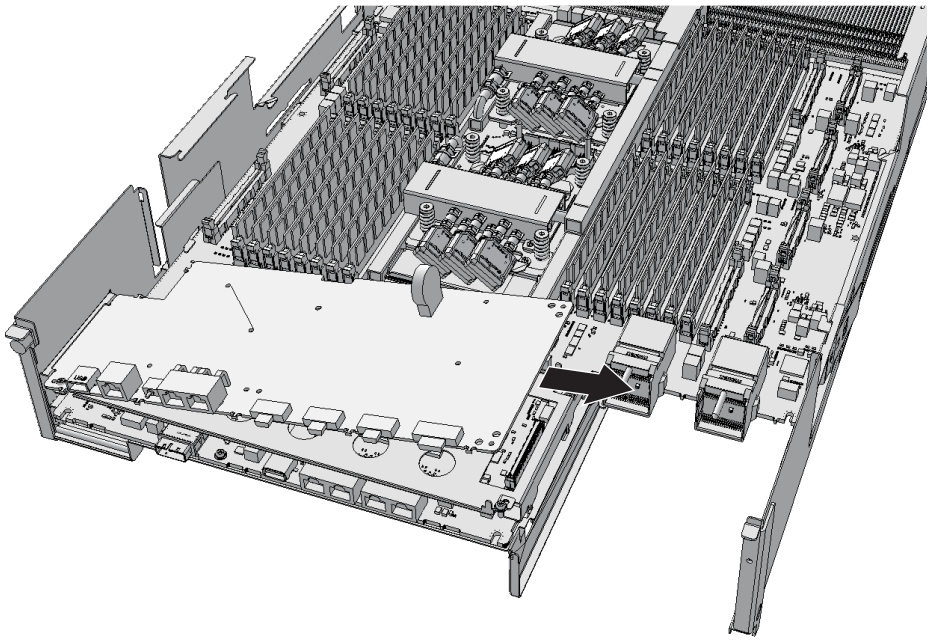


Figure 7-26 Pulling out an XSCF board (for the SPARC M10-4S with a FRAME-A CPU memory unit)



5. **Remove the screw fixing the XSCF mount.**
   - **For the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit**
     Remove the one screw fixing the XSCF mount (A in the figure).

Figure 7-27 Screw for the XSCF mount (for the SPARC M10-4 with a FRAME-A CPU memory unit)

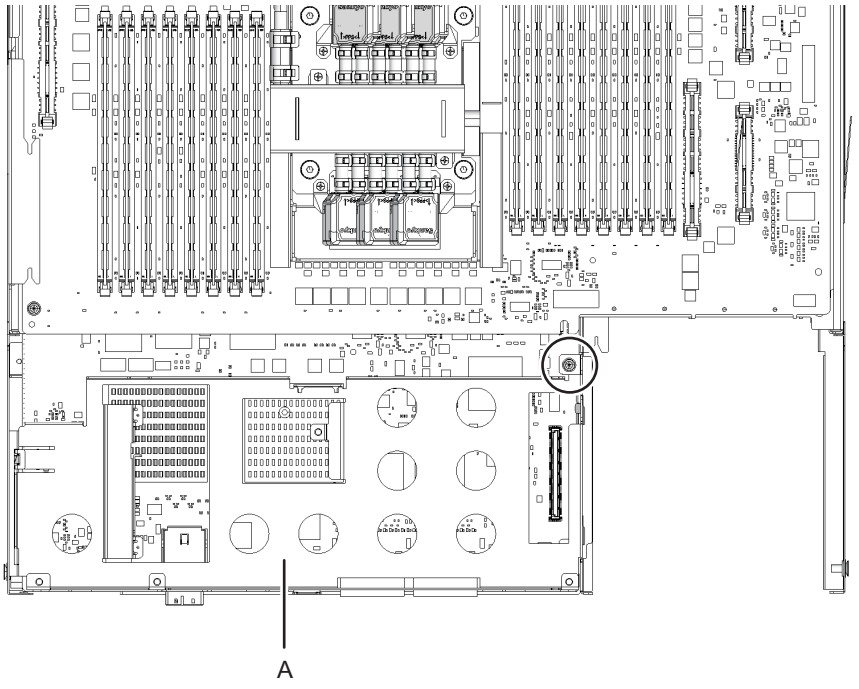
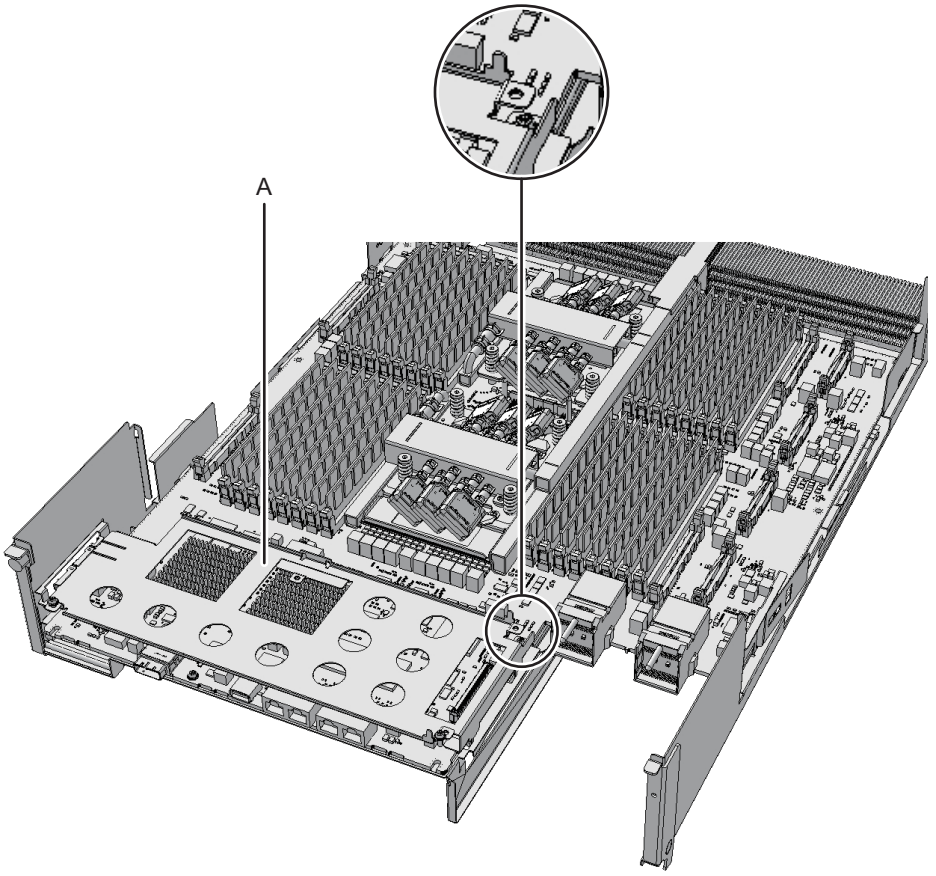
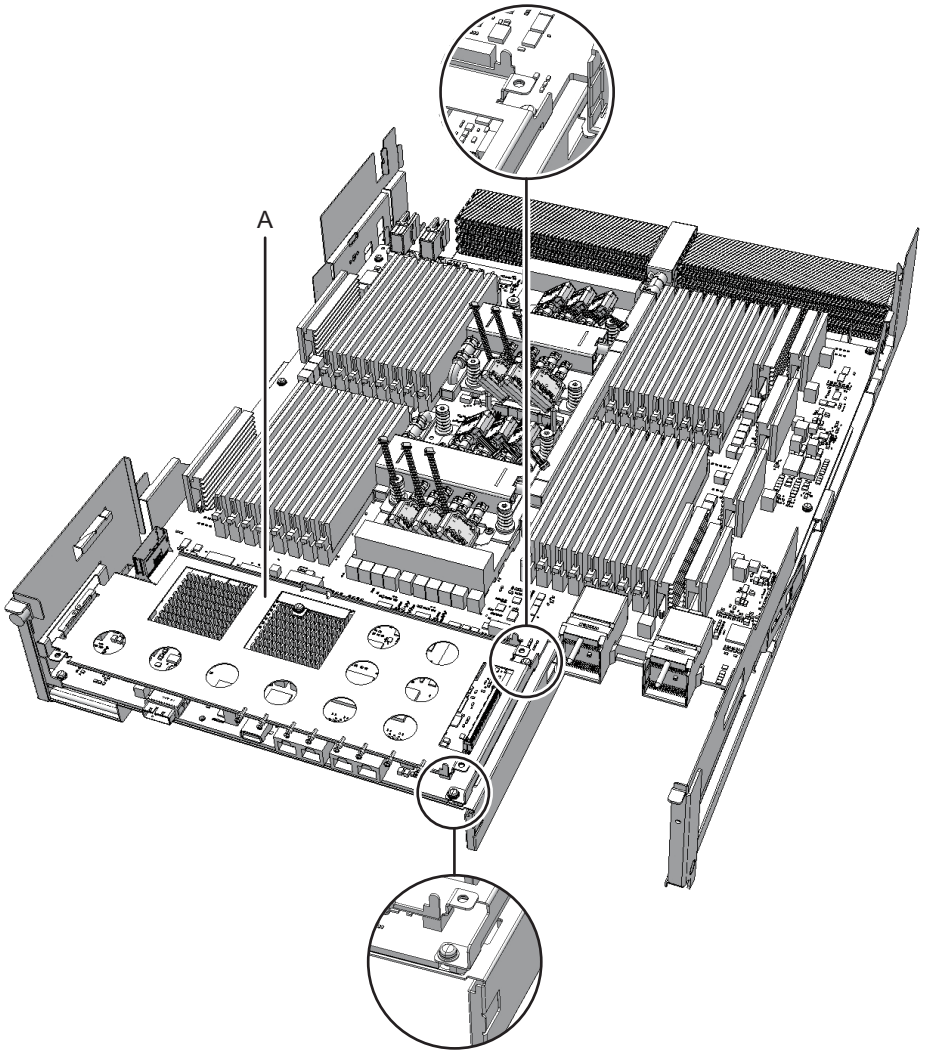


Figure 7-28 Screw for the XSCF mount (for the SPARC M10-4S with a FRAME-A CPU memory unit)



- **For the SPARC M10-4S with a FRAME-B CPU memory unit**
  Remove the two screws fixing the XSCF mount (A in the figure).

Figure 7-29 Screw for the XSCF mount (for the SPARC M10-4S with a FRAME-B CPU memory unit)



6. **Remove the XSCF mount.**
   - **For the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit**
     Raise the protruding left lever (B in the figure) of the XSCF mount (A in the figure) by about 2 mm (0.1 in.) with your fingers, and slide it about 8 mm (0.4 in.) toward the front (C in the figure). Then, remove it upward (D in the figure).

Figure 7-30 Removing the XSCF mount (for the SPARC M10-4 with a FRAME-A CPU memory unit)

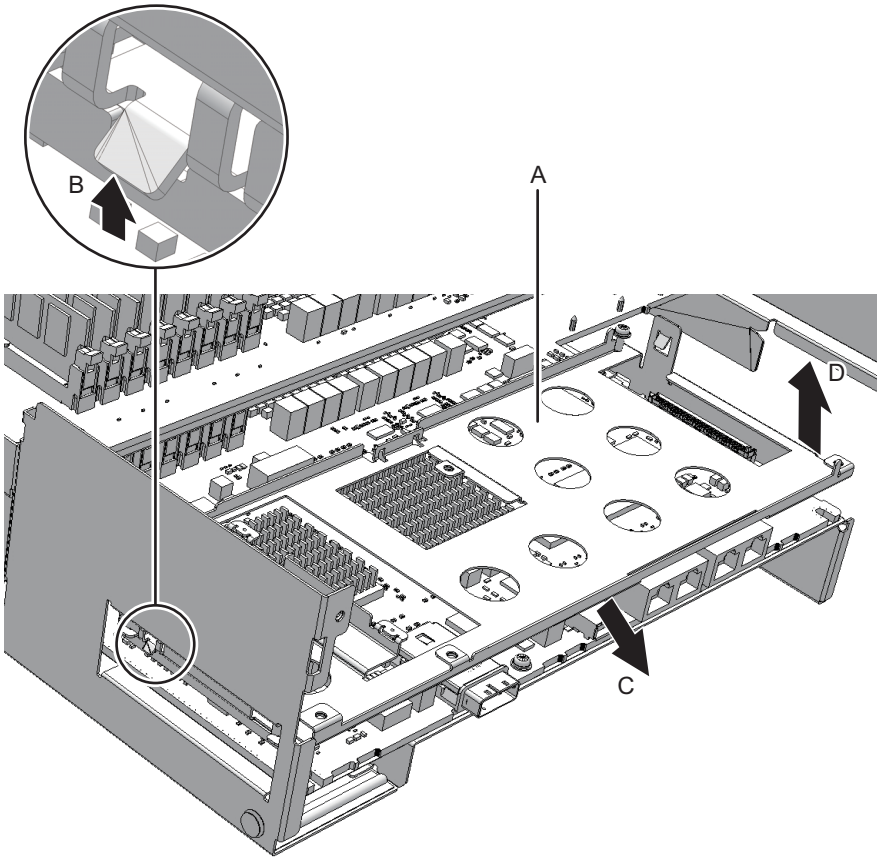
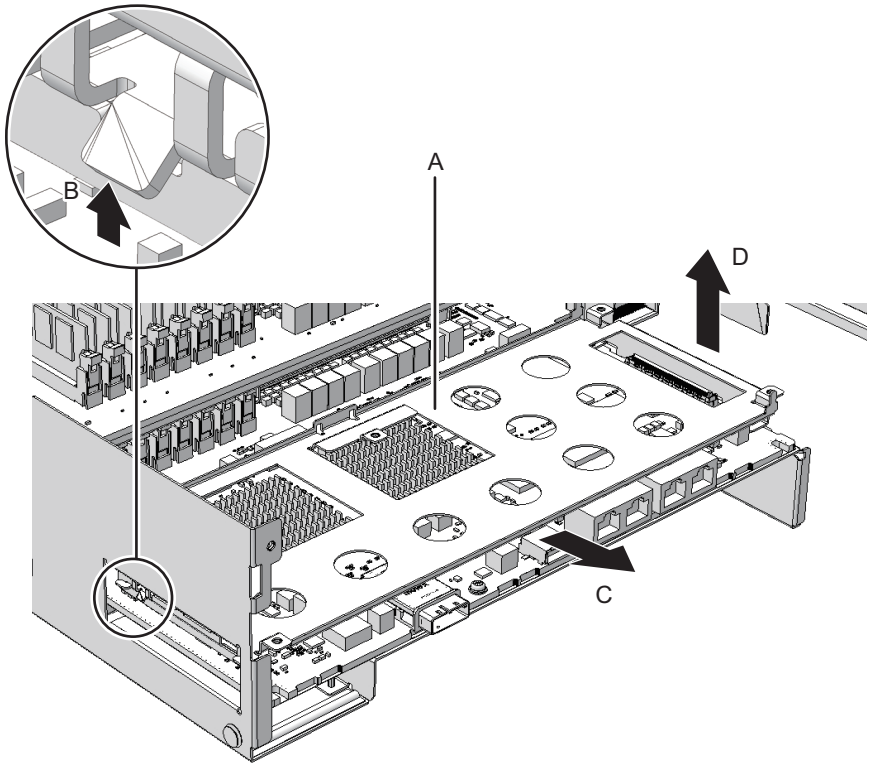
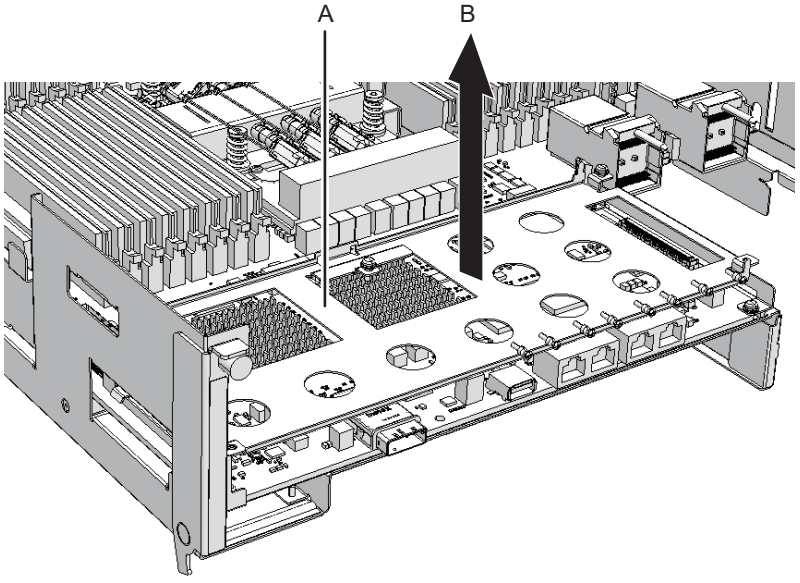


Figure 7-31 Removing the XSCF mount (for the SPARC M10-4S with a FRAME-A CPU memory unit)



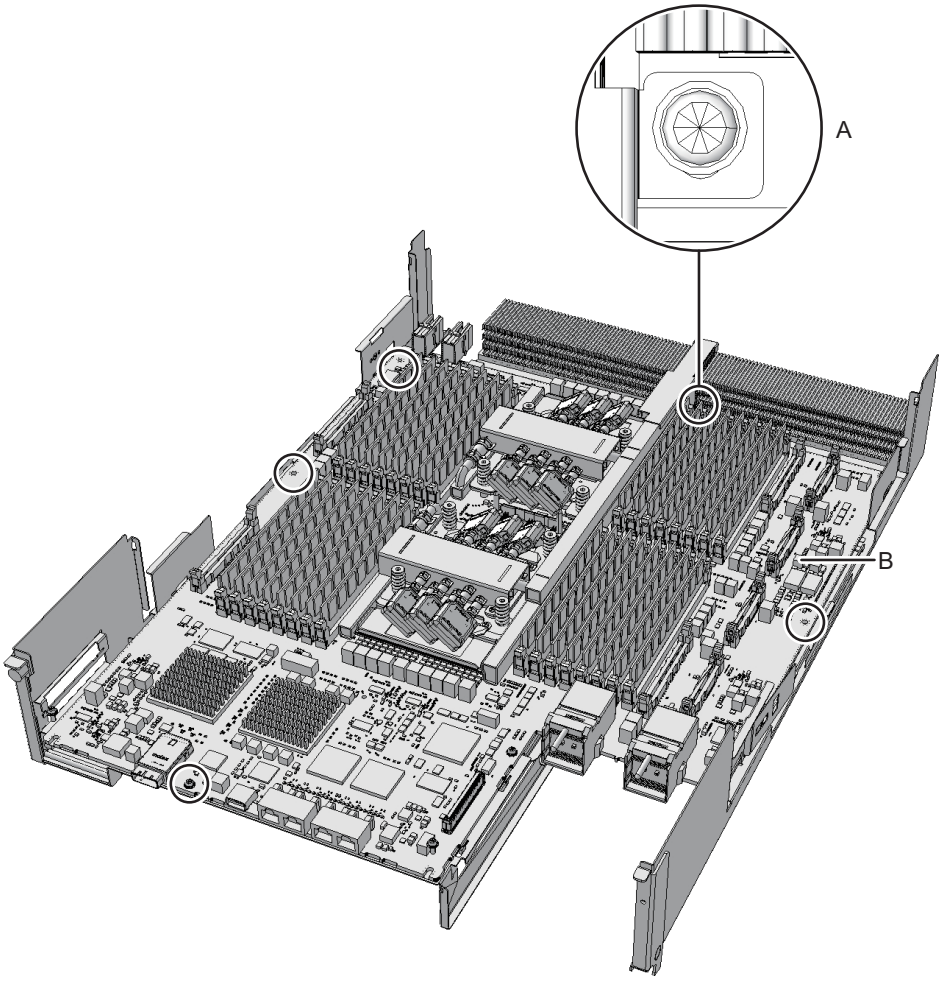
- **For the SPARC M10-4S with a FRAME-B CPU memory unit**
  Remove the XSCF mount (A in the figure) upward (B in the figure).

Figure 7-32 Removing the XSCF mount (for the SPARC M10-4S with a FRAME-B CPU memory unit)



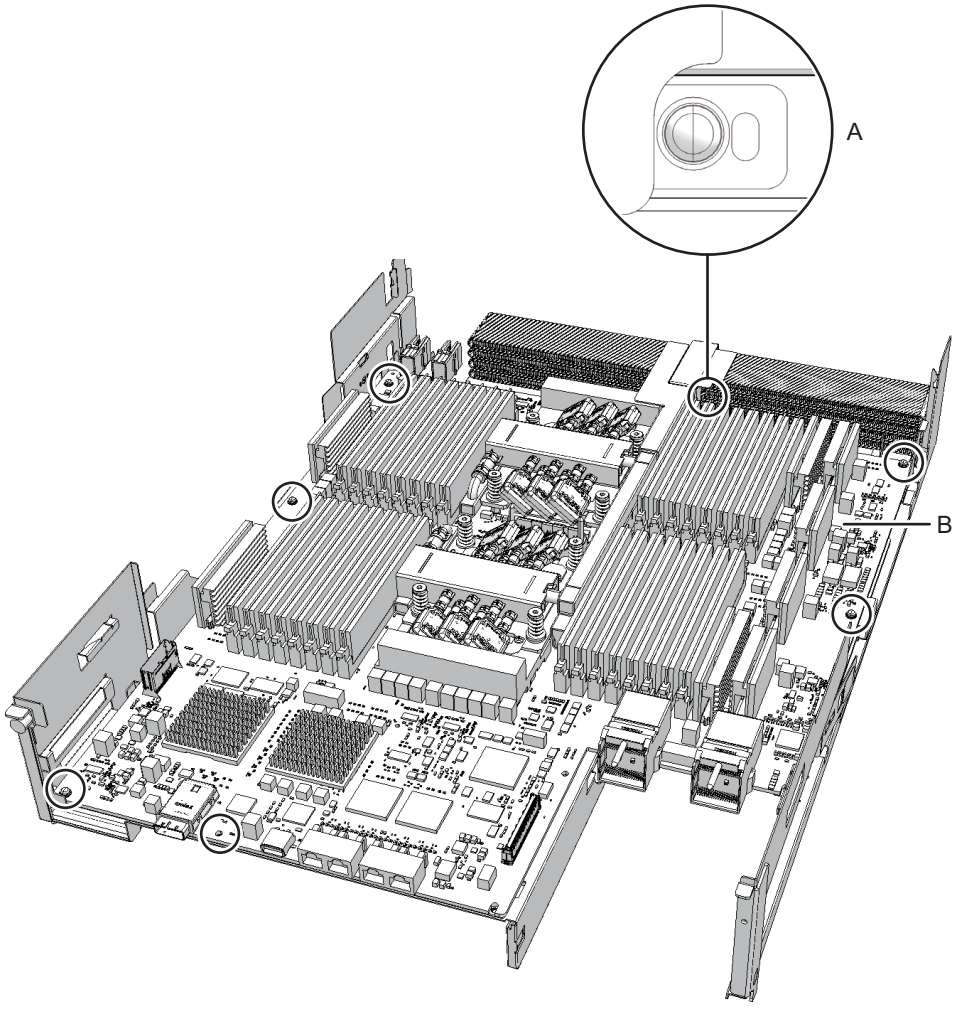
7. **Remove the screw fixing the CPU memory unit board.**
   - **For the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit**
     Remove the one black screw (A in the figure) fixing the center part of the radiator on the front and the four screws fixing the CPU memory unit board (B in the figure).

Figure 7-33 Screws on the CPU memory unit board (for the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit)



- **For SPARC M10-4S with a FRAME-B CPU memory unit**
  Remove the one black screw (A in the figure) fixing the center part of the radiator on the front and the six screws fixing the CPU memory unit board (B in the figure).

Figure 7-34 Screws on the CPU memory unit board (for the SPARC M10-4S with a FRAME-B CPU memory unit)



8. **Place your thumb on the frame located at the center of the right and left sides of the CPU memory unit board (A in the figure) and insert your fingers under the CPU memory unit board (B in the figure) from the side of the connector unit.**

Note - Be careful not to touch or catch your clothes or wrist strap on a connector pin located on the back side of the CPU memory unit board.
Note - Hard objects such as a machine tools should not come in contact with the connector located on the back side of the CPU memory unit board.

Figure 7-35 Finger position when releasing the connection of the connector (surface)

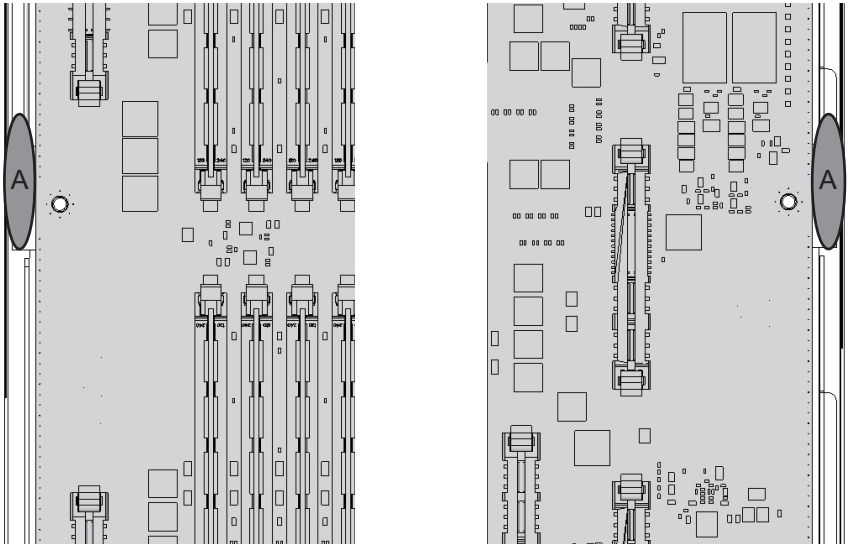
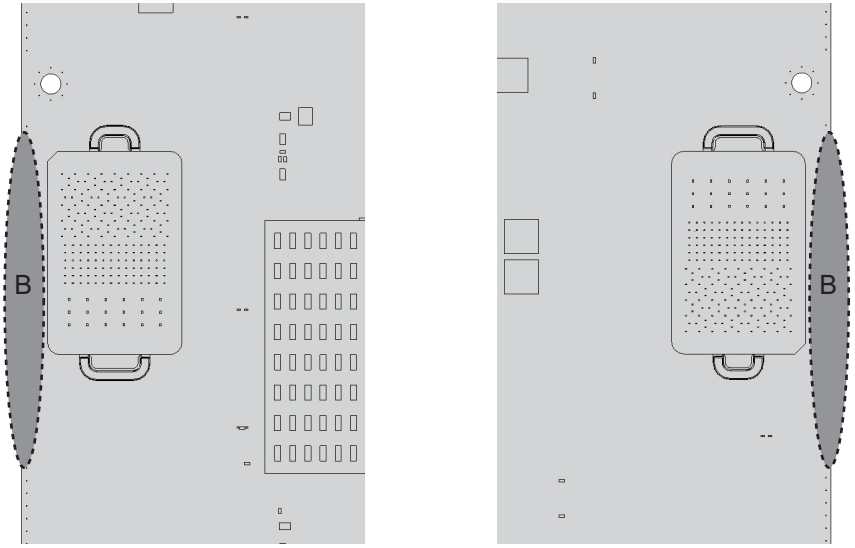


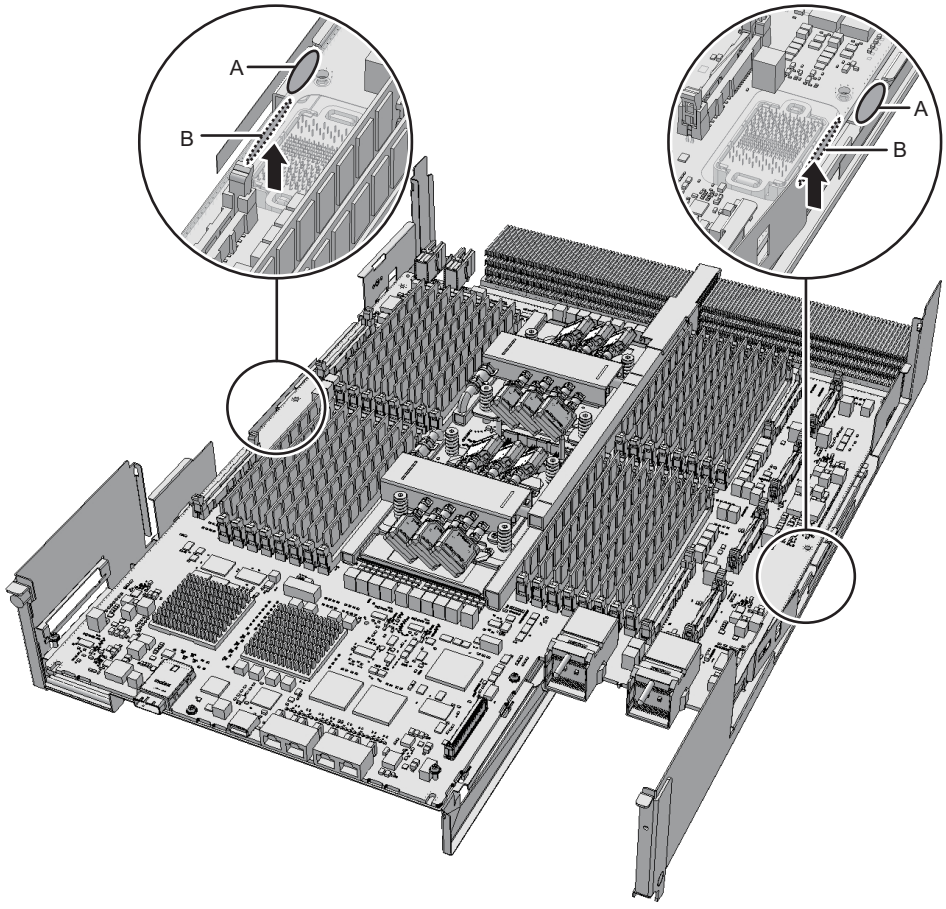
Figure 7-36 Finger position when releasing the connection of the connector (rear surface)



9. **Supporting the frame with your thumb (A in the figure), disconnect the connection of the connector by pushing up the left and right sides at the**

same time with the fingers that are inserted under the CPU memory unit board (B in the figure).

Figure 7-37 How to disconnect the connection of the connector



10. **Place your thumb on the connector unit located at the center of the right and left sides of the CPU memory unit board (A in the figure) and hold the board by inserting your fingers under the CPU memory unit board (B in the figure) from the side of the connector unit.**

Note - Place the removed CPU memory unit board on a grounded antistatic ESD mat.

Figure 7-38 Finger position when holding the board (surface)

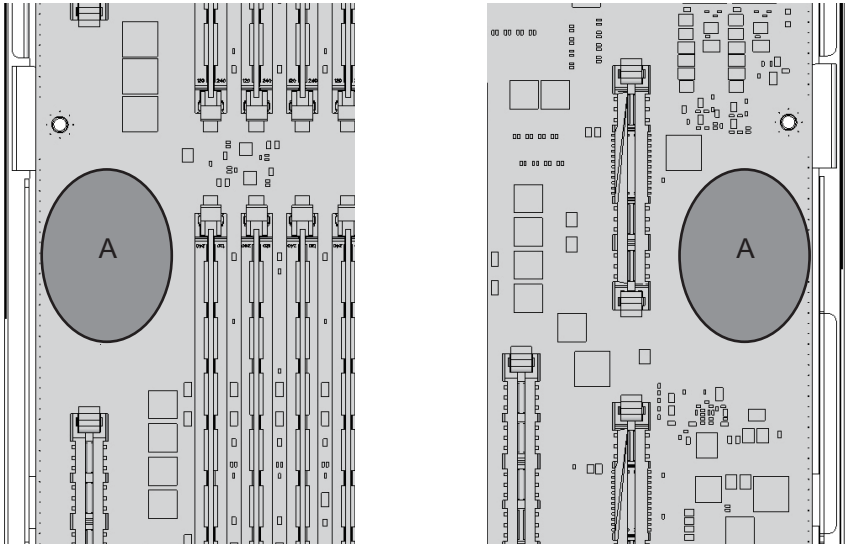
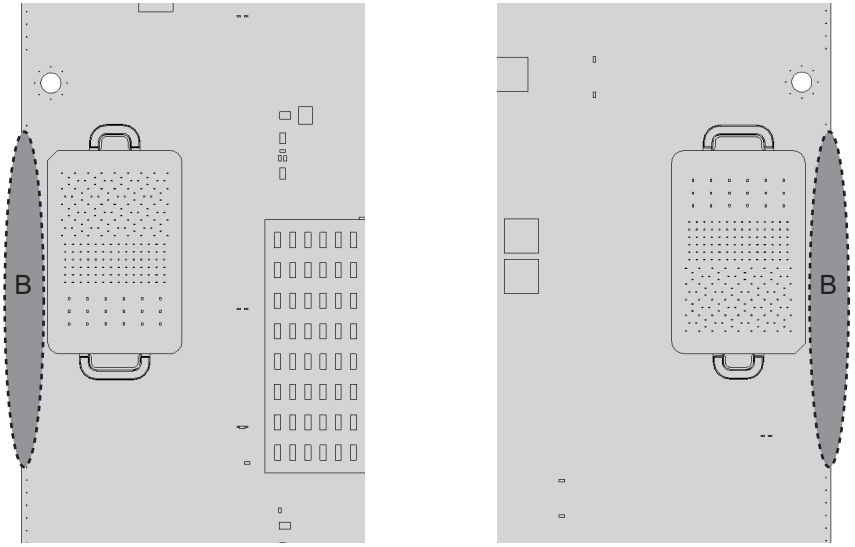
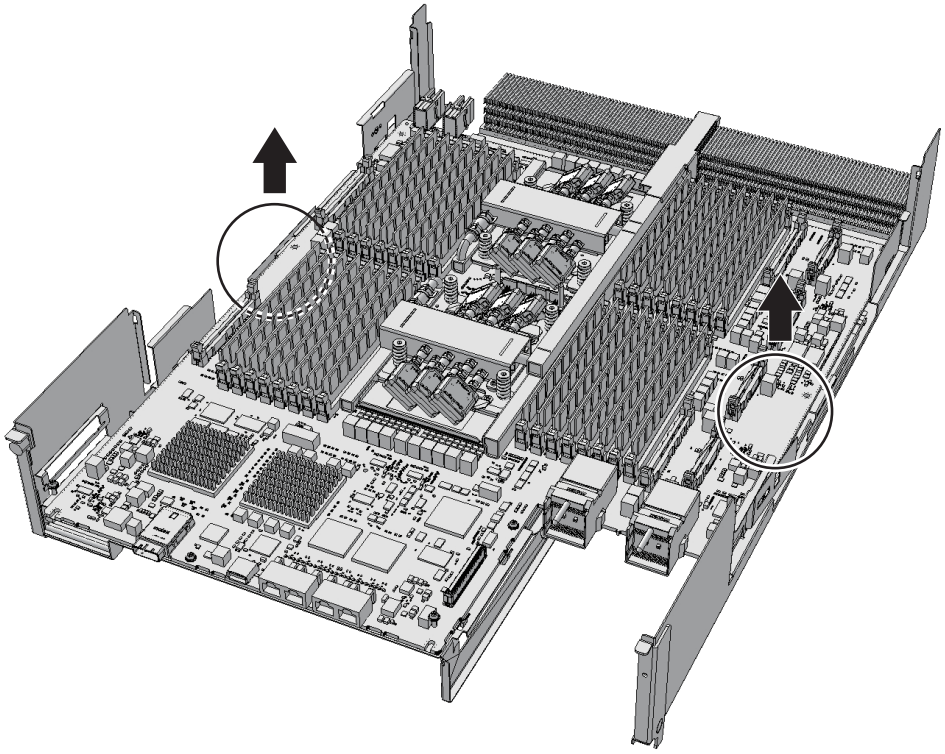


Figure 7-39 Finger position when holding the board (rear surface)



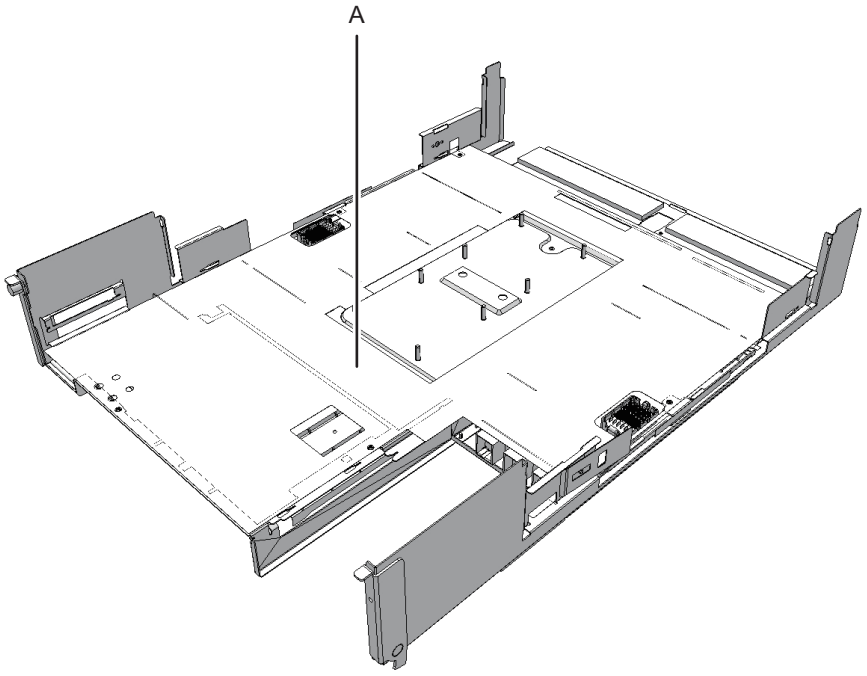
11. **Lift the CPU memory unit board in the horizontal position and remove it from the frame.**

Figure 7-40 Removing the CPU memory unit board



12. **Remove the sheet (A in the figure).**
You can expand the CPU memory unit upper by performing the above procedure. You do not have to perform step 10.

Figure 7-41 Removing the sheet

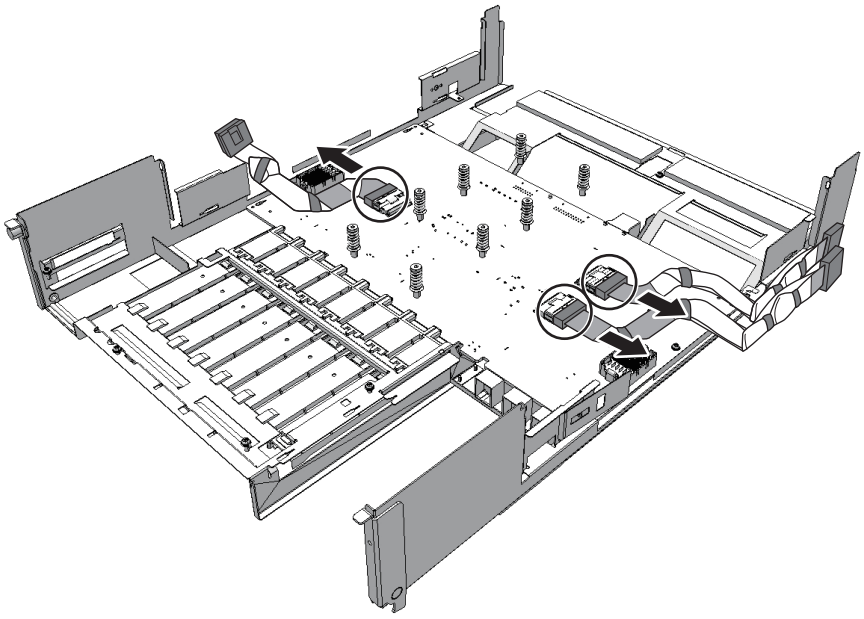


13. **Remove the three PCIe cables.**
The direction in which the PCIe cables are removed varies depending on the type of the CPU memory unit.

Note - Do not attempt to remove a PCIe cable in the wrong direction. If excessive force is used to remove a PCIe cable, it may be damaged.

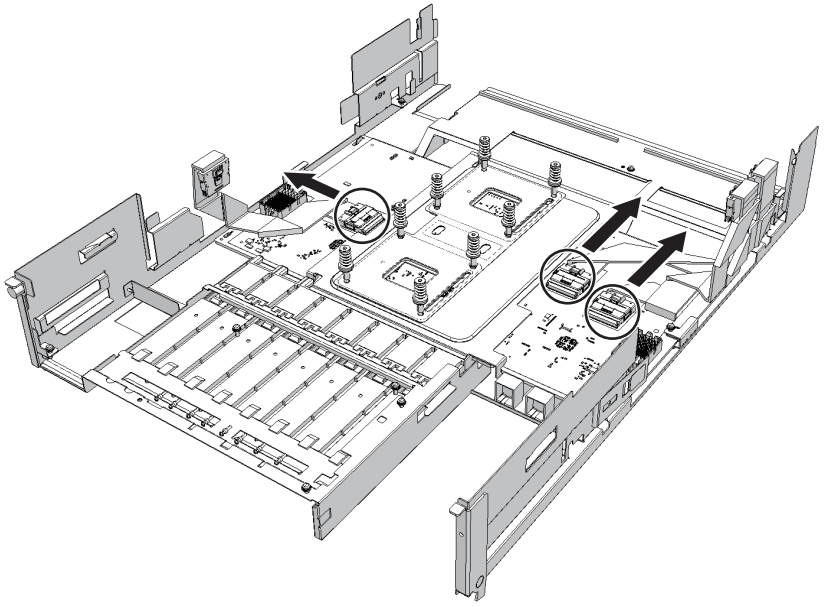
- **The connectors for the three PCIe cables facing the outside of the CPU memory unit**

Figure 7-42 Removing the PCIe cables (with the connectors for the three PCIe cables facing the outside of the CPU memory unit)



- **The connector for one PCIe cable facing the outside of the CPU memory unit and the other two facing the front of the CPU memory unit**

Figure 7-43 Removing the PCIe cables (with the connector for one PCIe cable facing the outside and the other two facing the front of the CPU memory unit)



7.5 Installing a CPU Memory Unit

This section describes the procedure for installing a CPU memory unit. Unless otherwise specified, the figures explained in this section use the SPARC M10-4S with a FRAME-A CPU memory unit.

Note - When mounting a CPU memory unit, check the connectors on both of the chassis and CPU memory unit beforehand to confirm that no pin is bent and all the pins are neatly arranged in lines. If there is a bent pin in a connector, mounting a CPU memory unit may damage the chassis or CPU memory unit. Also, carefully proceed with the work to prevent any pin from being bent.

7.5.1 Installing a PCI Express cable

Note - A part of the procedure varies depending on the CPU memory unit type. To determine the CPU memory unit type, check the label in Figure 7-2.

When expanding the CPU memory unit upper or when replacing a PCIe cable, connect the PCIe cable. You can reduce a CPU memory unit upper by performing the procedure from step 2.

Note - When expanding a CPU memory unit upper, first connect the PCIe cable to the CPU memory unit lower. The PCIe cables are attached as an accessory of the CPU memory unit upper.

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1. **Connect the three PCIe cables by matching their position labels of the PCIe cable with the corresponding position marks on the PCIBP board (A in the figure).**

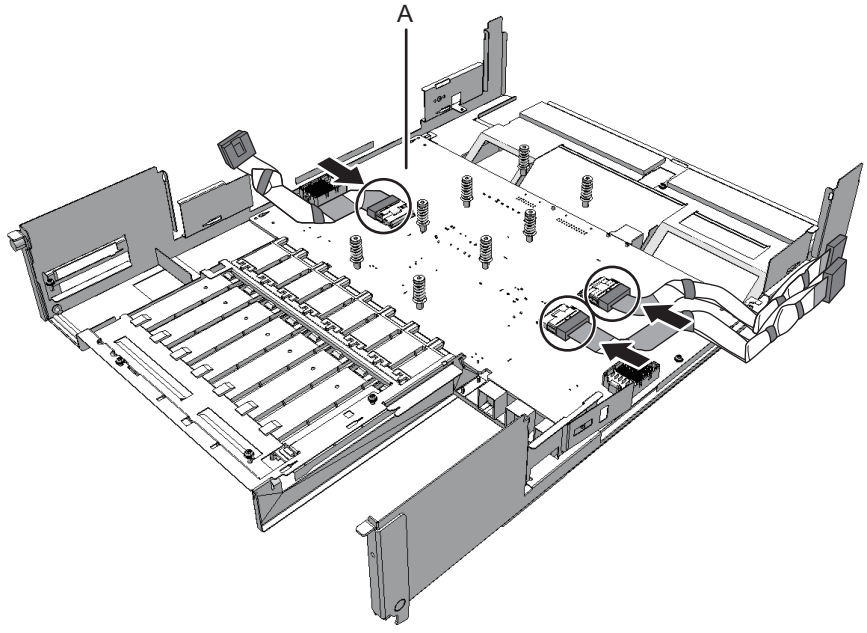
   The direction in which the PCIe cables are installed varies depending on the type of the CPU memory unit.

   When reducing a CPU memory unit upper, you do not have to perform this step because the PCIe cables are not present.

Note - Do not attempt to install a PCIe cable in the wrong direction. If excessive force is used to install a PCIe cable, it may be damaged.
Note - Ensure that the PCIe cables are firmly connected and secure.

- **The connectors for the three PCIe cables facing the outside of the CPU memory unit**

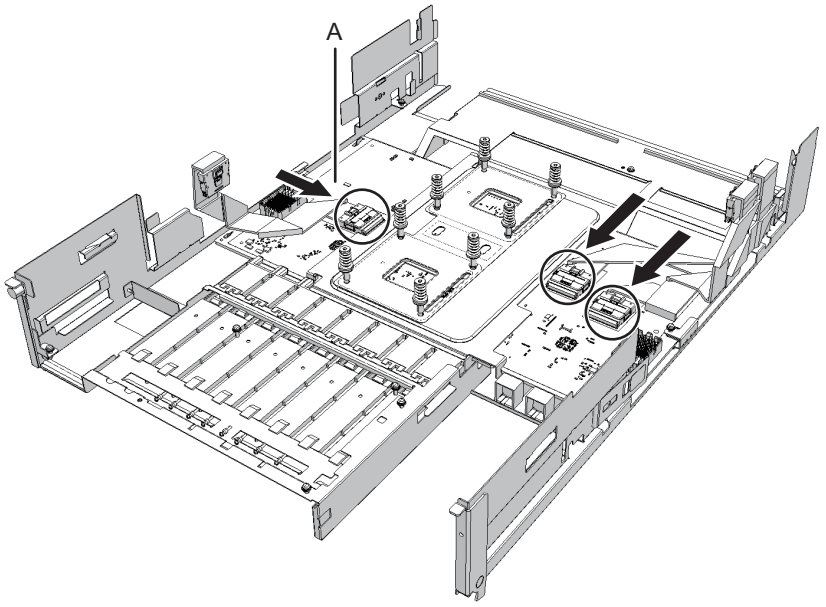
Figure 7-44 Installing the PCIe cables (with the connectors for the three PCIe cables facing the outside of the CPU memory unit)



- **The connector for one PCIe cable facing the outside of the CPU memory**

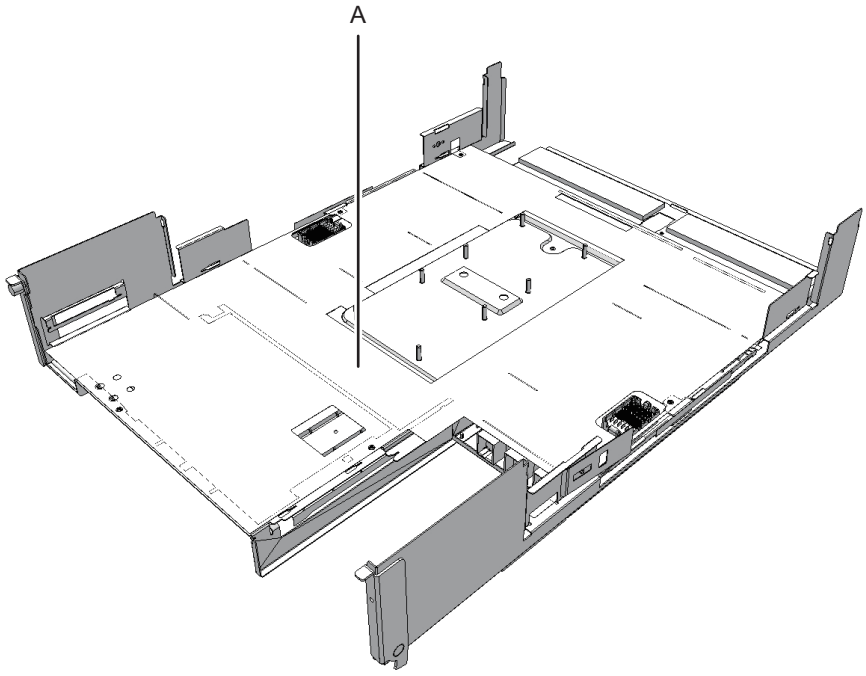
unit and the other two facing the front of the CPU memory unit

Figure 7-45 Installing the PCIe cables (with the connector for one PCIe cable facing the outside and the two facing the front of the CPU memory unit)



2. **Install the sheet (A in the figure).**

Figure 7-46 Installing sheet



3. **Hold the connector unit at the center of the CPU memory unit board and install it on the frame in the horizontal position.**
   For how to hold the CPU memory unit board, see Figure 7-38 and Figure 7-39.

Note - Do not tilt the CPU memory unit board when installing it. The board may be damaged by hitting the back side of the board against a protruding part or the frame guide.

Figure 7-47 Correct position of the CPU memory unit board

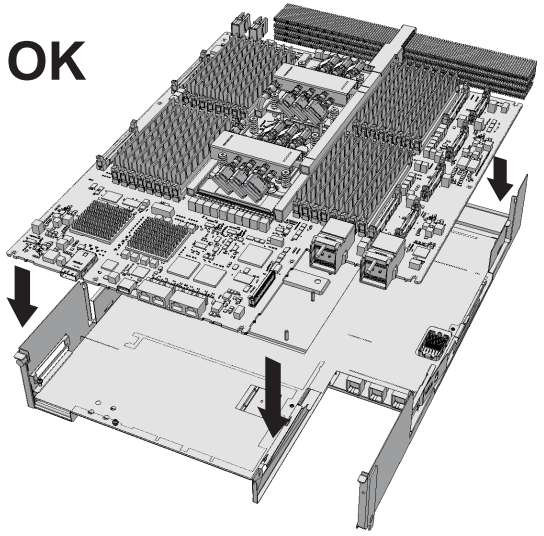
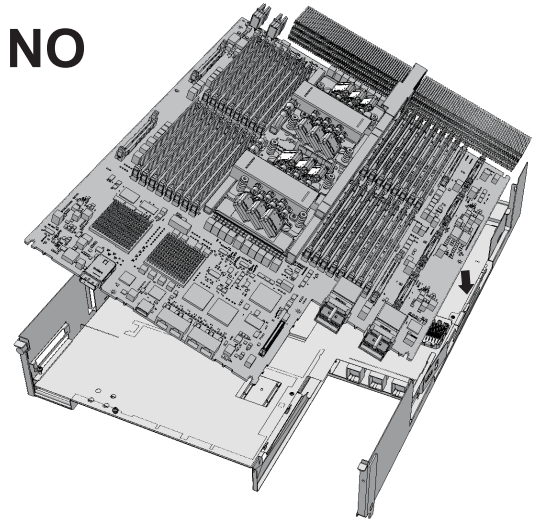


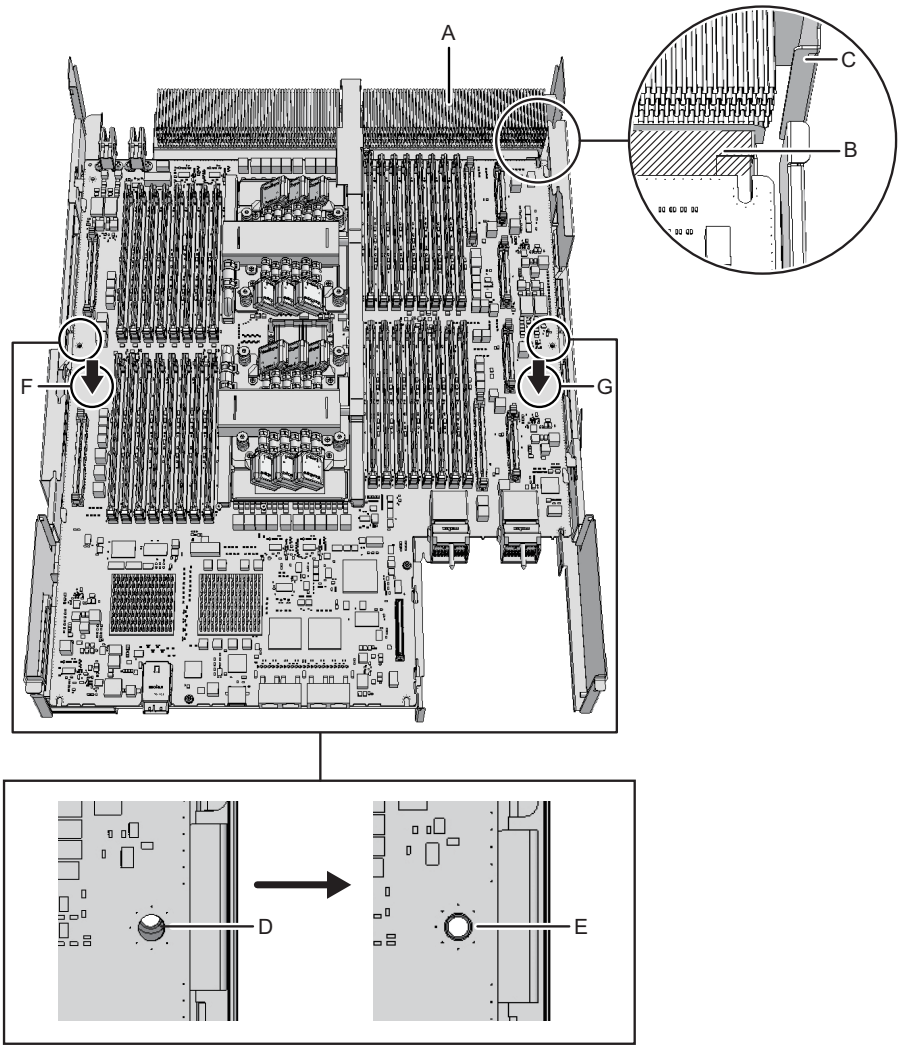
Figure 7-48 Wrong position of the CPU memory unit board



- **For the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit**
  Install the frame so that the bent tip of the frame (C in the figure) can be inserted into the space (B in the figure) between the end face of the far side of the CPU memory unit board and the radiator (A in the figure).
  a. Insert the board carefully into the frame, keeping it horizontal.
  b. If the threaded hole of the board and the threaded hole of the frame (D in the figure) do not match when inserting the frame, place the board by adjusting the position of the frame so that the outer circumference of the

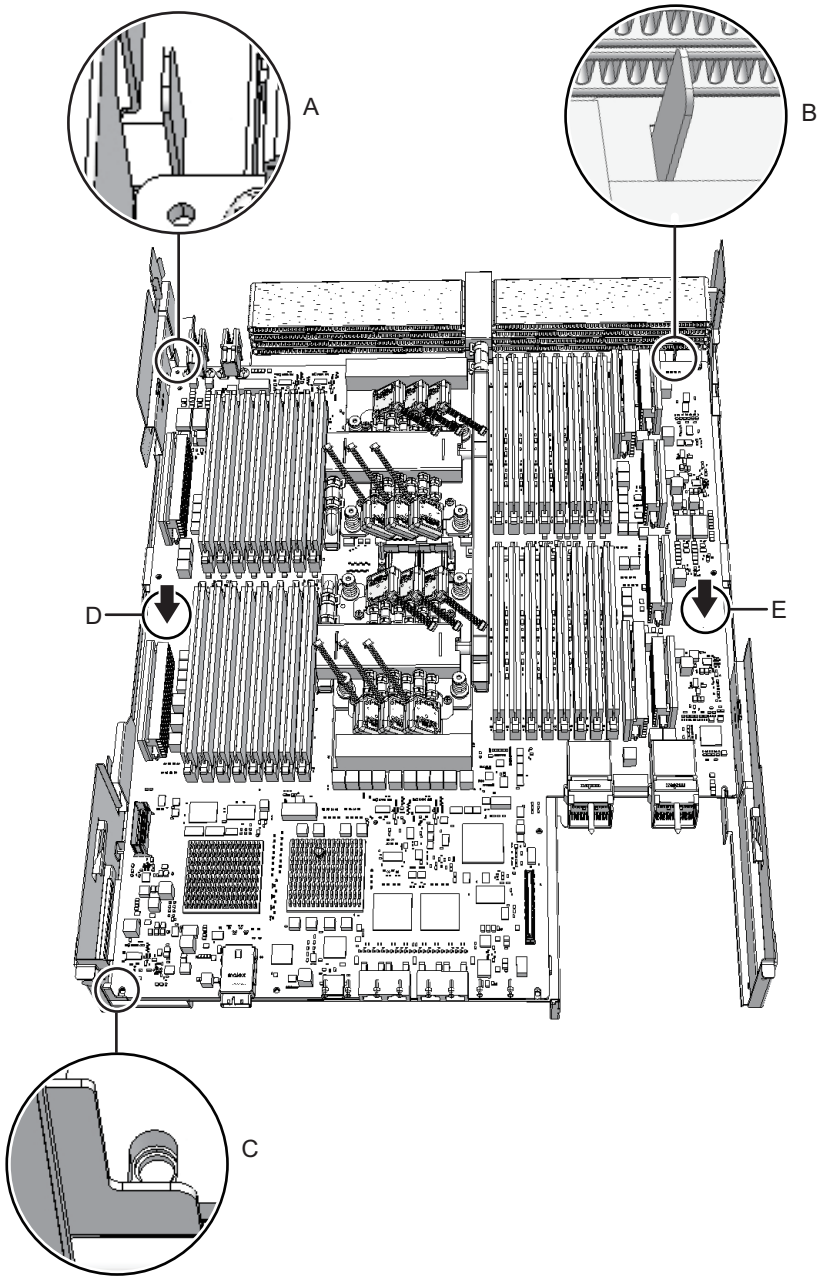
threaded hole of the frame can be seen (E in the figure).
c. Attach the connector by pressing down the connector units (F and G in the figure) located at the center of the right and left sides of the board at the same time.

Figure 7-49 Installing the CPU memory unit board (for the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit)



- **For the SPARC M10-4S with a FRAME-B CPU memory unit**
  Install the CPU memory unit board with the left and right guides (A and B in the figure) and the left guide on the board (C in the figure) as a guide.
  a. Insert the board carefully into the frame, keeping it horizontal.
  b. Attach the connector by pressing down the connector units (D and E in the figure) located at the center of the right and left sides of the board at the same time.

Figure 7-50 Installing the CPU memory unit board (for the SPARC M10-4S with a FRAME-B CPU memory unit)

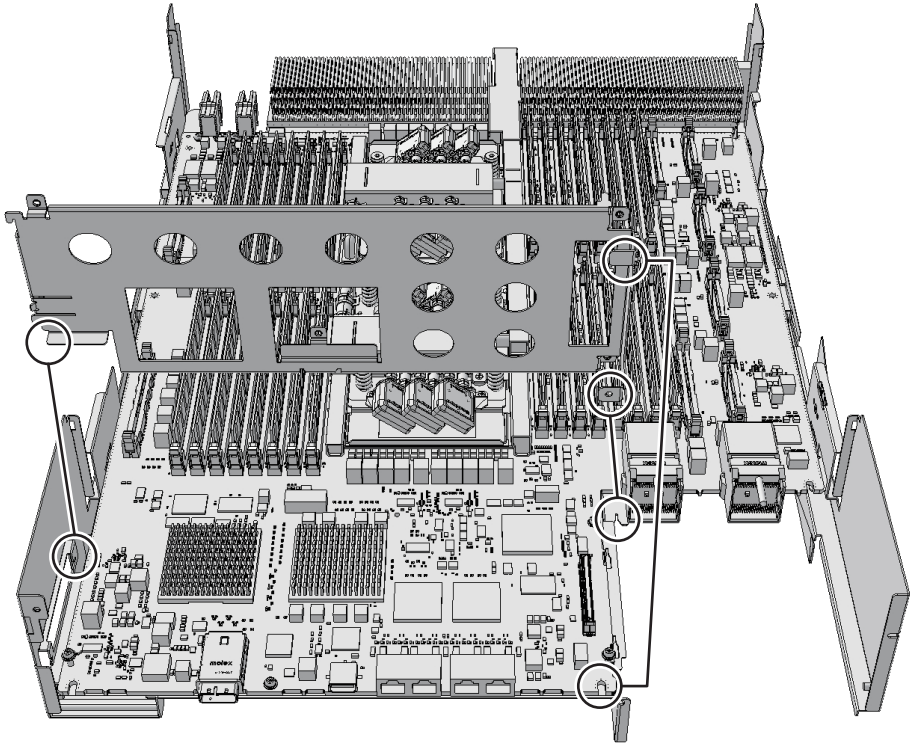


4. **Fix the CPU memory unit board with screws.**
   - **For the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit**
     Fix the CPU memory unit board with four screws and the center part of the radiator on the front with one black screw.

- **For the SPARC M10-4S with a FRAME-B CPU memory unit**
  Fix the CPU memory unit board with six screws.

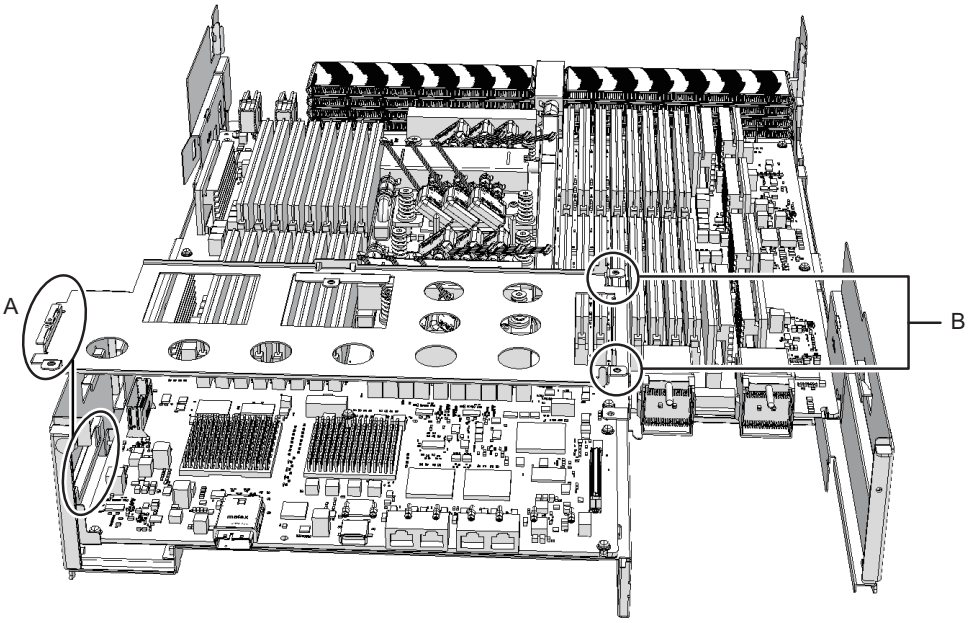
5. **Install the XSCF mount and fix it with screws.**
   - **For the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit**
     Align the one point on the left and two points on the right of the XSCF mount with the frame guides of the CPU memory unit lower. Then, install the XSCF mount by sliding it to the front and fix it with one screw.

Figure 7-51 Installing the XSCF mount (for the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit)



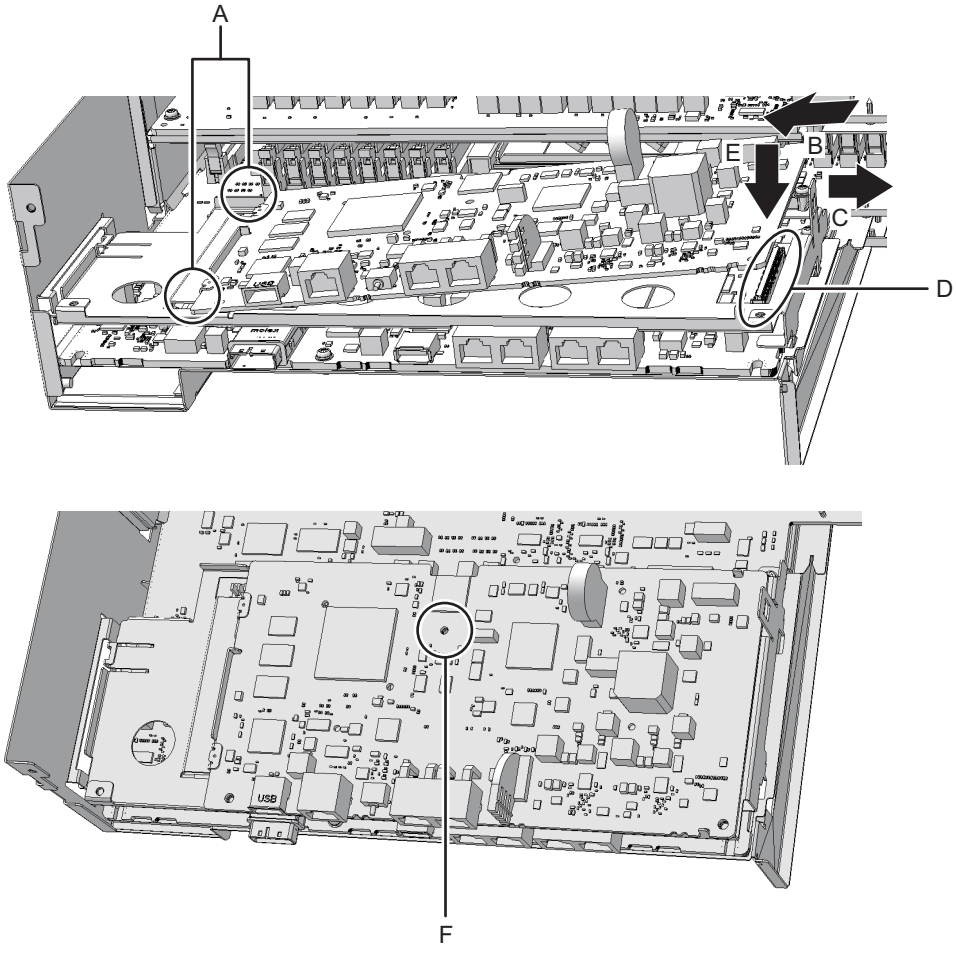
   - **For the SPARC M10-4S with a FRAME-B CPU memory unit**
     Align the left protruding part (A in the figure) of the XSCF mount with the frame guide of the CPU memory unit lower to install the XSCF mount. Then, fix it with two screws (B in the figure).

Figure 7-52 Installing the XSCF mount (for the SPARC M10-4S with a FRAME-B CPU memory unit)



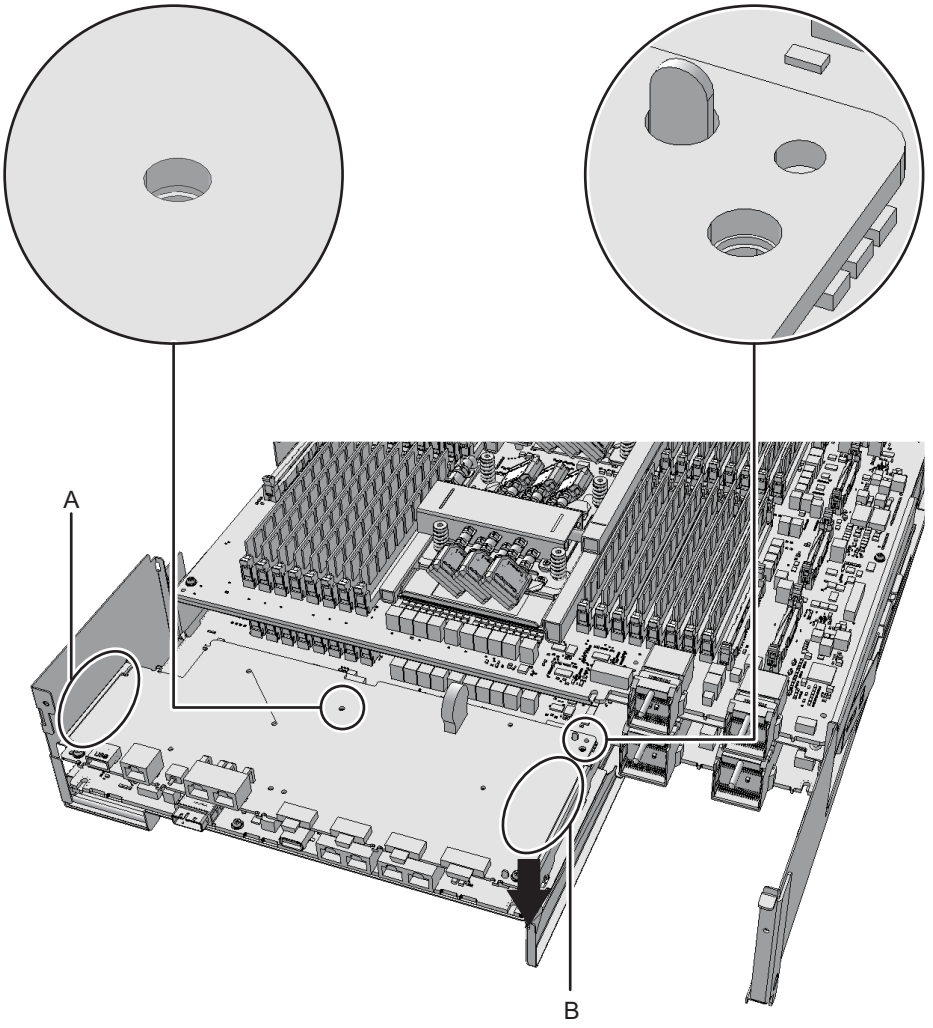
6. **Install the XSCF board.**
   - **For the SPARC M10-4 with FRAME-A CPU memory unit**
     Insert the XSCF board into guides at the two locations (A in the figure) on the mount (B in the figure), and push the right lever of the mount about 5 mm (0.2 in.) to the right (C in the figure) to attach (E in the figure) the connector unit (D in the figure). Then, fix it with one screw (F in the figure).

Figure 7-53 Installing the XSCF board (for the SPARC M10-4 with a FRAME-A CPU memory unit)



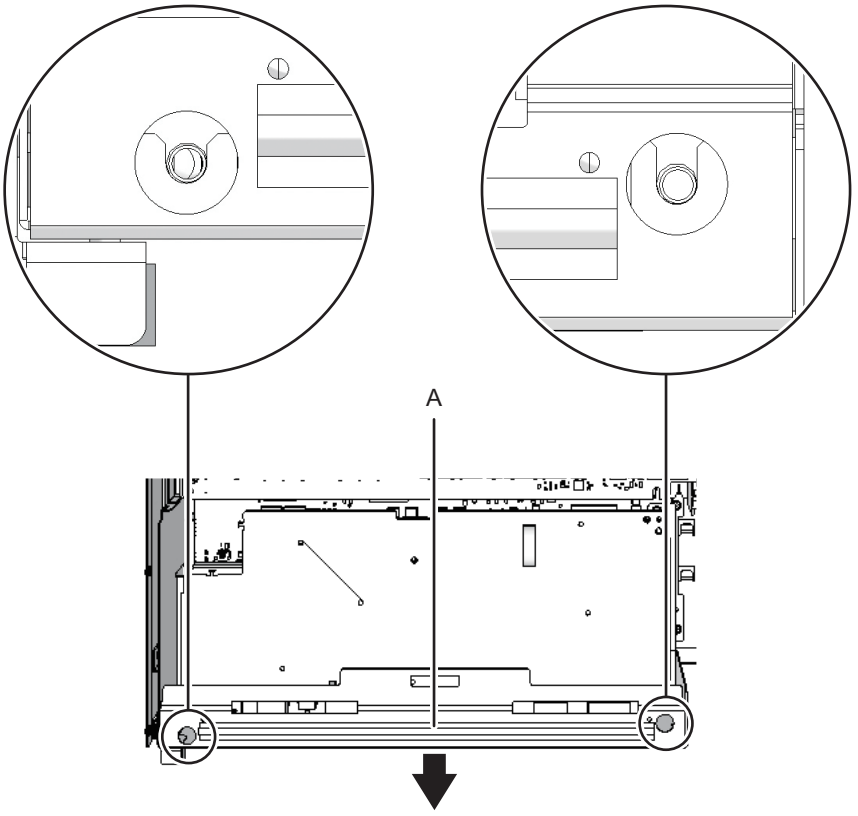
- **For the SPARC M10-4S with FRAME-A CPU memory unit**
  Insert the XSCF board into the left guide (A in the figure), and press down the right connector unit (B in the figure) to attach the connector. Then, fix it with two screws.

Figure 7-54 Installing the XSCF board (for the SPARC M10-4S with a FRAME-A CPU memory unit)



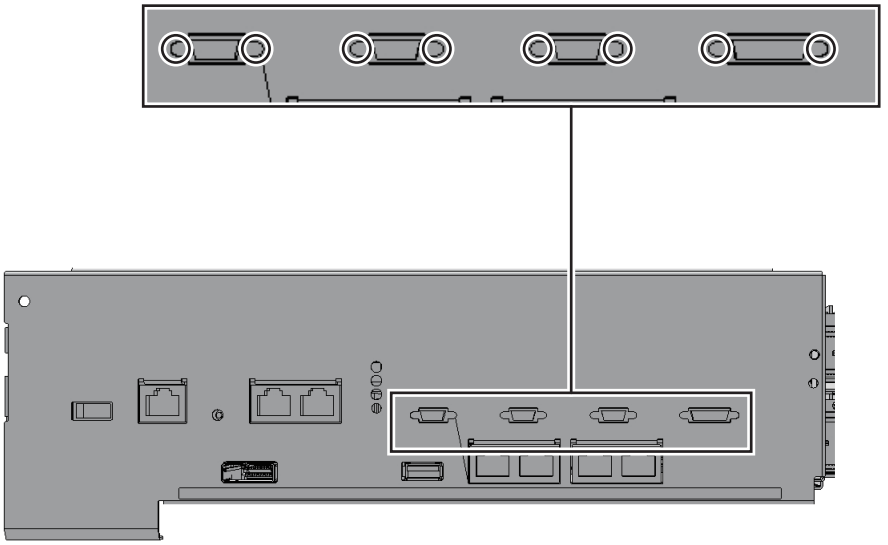
7. **Attach the rear cover with two screws from the upper part of the rear side of the CPU memory unit lower.**

Figure 7-55 Screws for rear cover



8. **Install the eight screws at both ends of the XSCF cable connection port on the rear of the CPU memory unit lower.**
   For the SPARC M10-4 with a FRAME-A CPU memory unit and the SPARC M10-4S with a FRAME-B CPU memory unit, this step is not necessary.

Figure 7-56 Screws for both ends of the XSCF cable connection ports (for the SPARC M10-4S with a FRAME-A CPU memory unit)



7.5.2 Installing the CPU memory unit upper

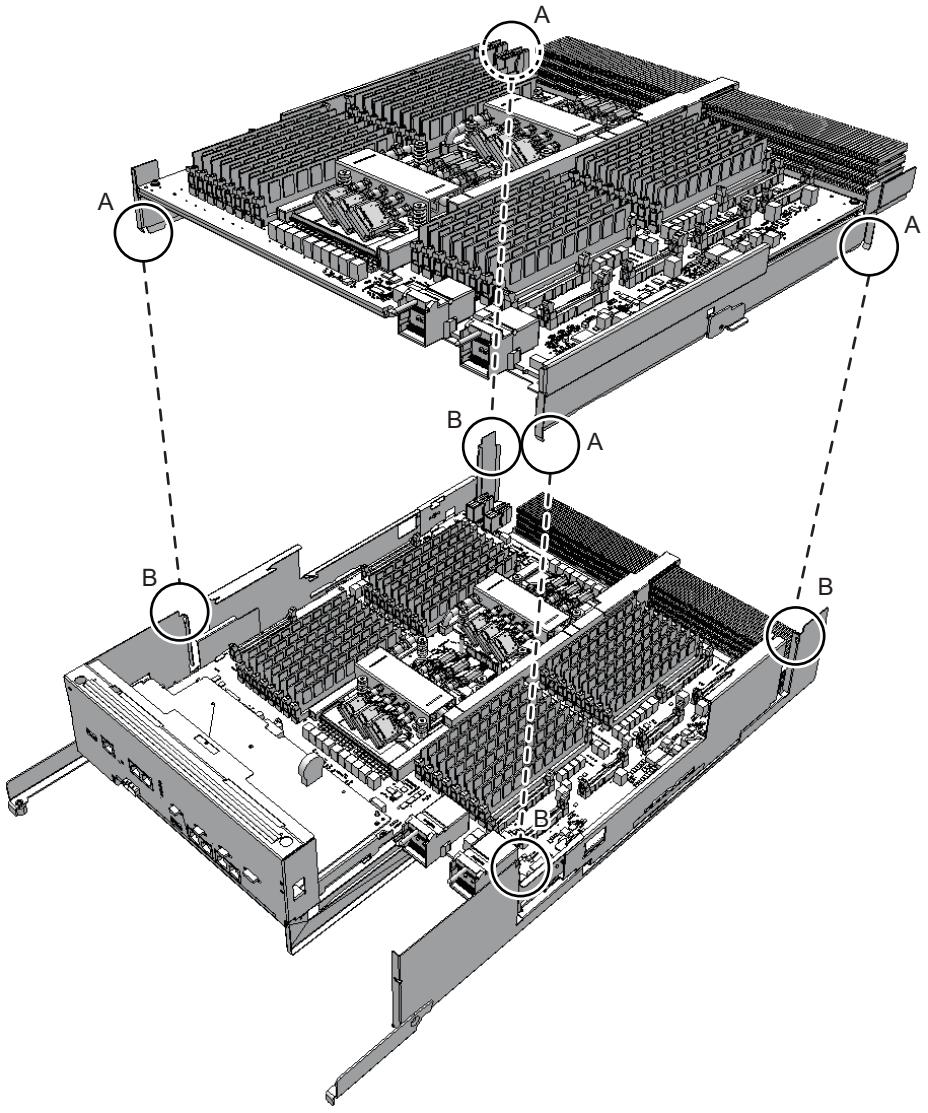
Note - A part of the procedure varies depending on the CPU memory unit type. To determine the CPU memory unit type, check the label in Figure 7-2.

Install the CPU memory unit upper to the CPU memory unit lower. Perform expansion using the same procedure.

1. **Install the CPU memory unit upper on the CPU memory unit lower.**
   - **When installing the CPU memory unit upper**
     Carefully install the CPU memory unit upper by setting the four guides (A in the figure) of the CPU memory unit upper into the grooves (B in the figure) of the CPU memory unit lower.

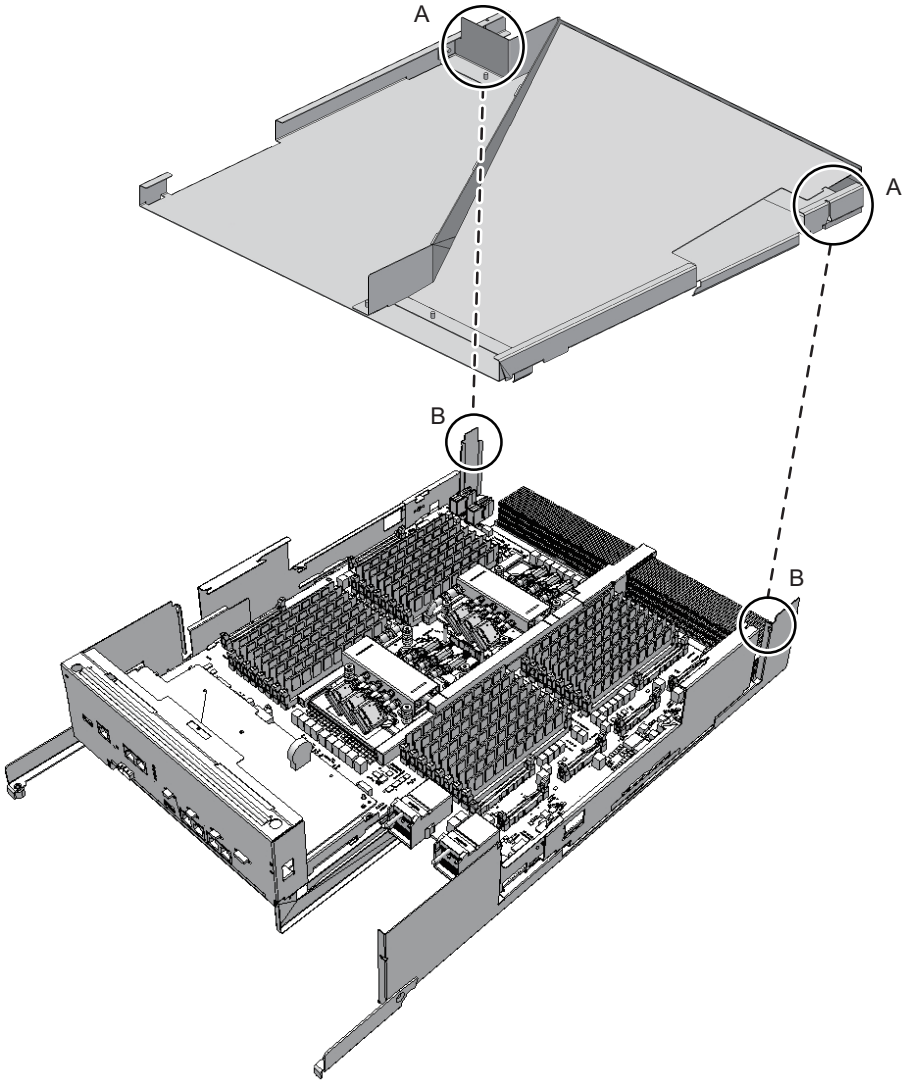
Note - Confirm that the levers on the left and right sides of the CPU memory unit upper are closed.

Figure 7-57 Guide positions of the CPU memory unit upper



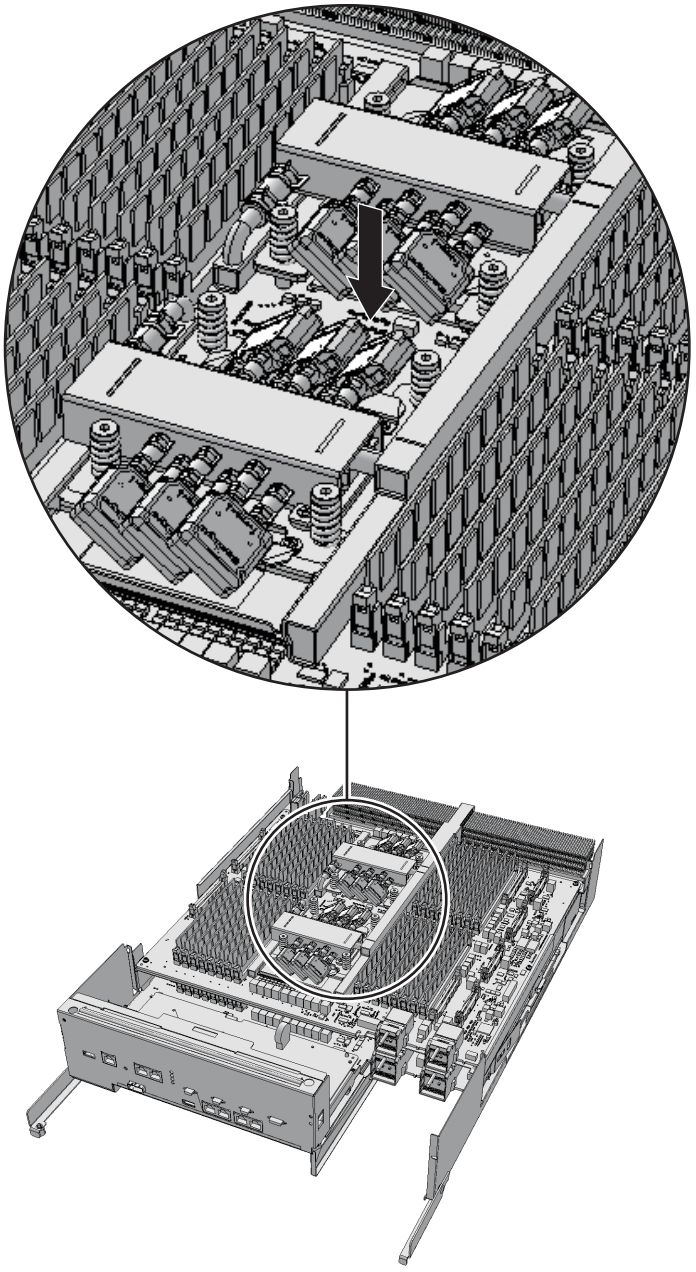
- **When installing the filler unit for the CPU memory unit upper**
  Carefully install the filler unit for the CPU memory unit upper by setting the two guides (A in the figure) of the filler unit in the groove (B in the figure) of the CPU memory unit lower.

Figure 7-58 Guide positions of the filler unit for the CPU memory unit upper



2. **Install the CPU memory unit upper by holding it down from the center where the label "PUSH" is applied, and then push it into place.**
   Firmly push the unit so that there is no space between the CPU memory unit upper and the frame of the CPU memory unit lower.

Figure 7-59 Position where the CPU memory unit upper is pushed



3. **Connect, to the CPU memory unit upper, the four right and left PCIe cables connecting the CPU memory units upper and lower.**
   While pressing the pin that locks the PCIe cable, insert it vertically.

Note - Of the two PCIe cables on the right side, also install the one (short) cable on the rear of the CPU memory unit lower.

4. **Install the right- and left-side guides.**
   Each guide has four clips. Install the guides using the clips, and slide each guide while pushing its lock.

Note - Be careful not to damage the PCIe cable when installing the left- and right-side guides.

Figure 7-60 Positions of the clips on the left- and right-side guides (for the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit)

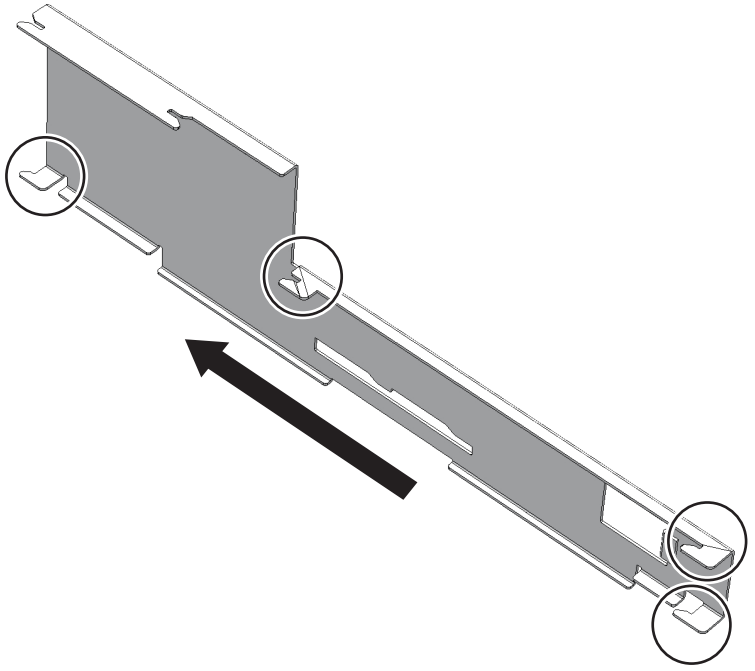


Figure 7-61 Positions of the clips on the left- and right-side guides (for the SPARC M10-4S with a FRAME-B CPU memory unit)

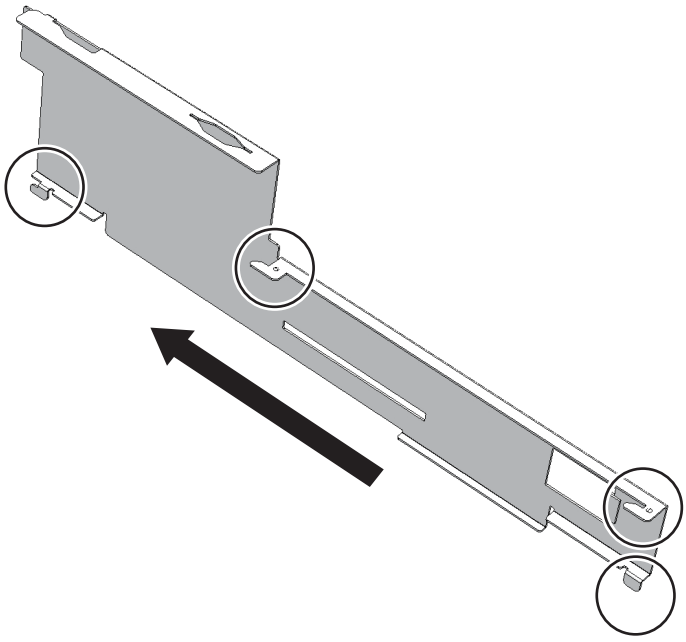
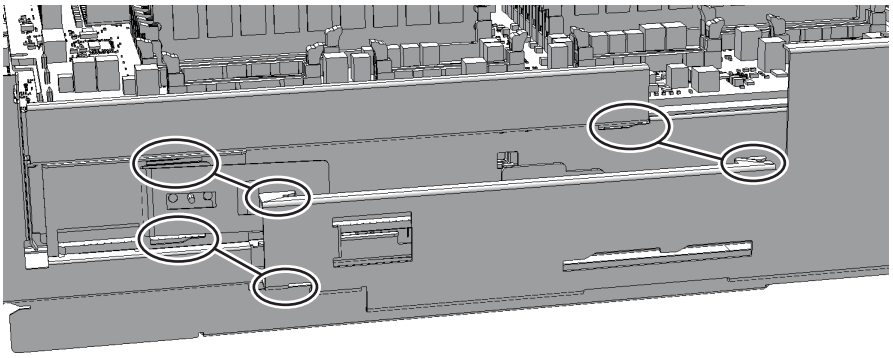


Figure 7-62 CPU memory unit upper and positions of the clips on the side guide (for the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit)



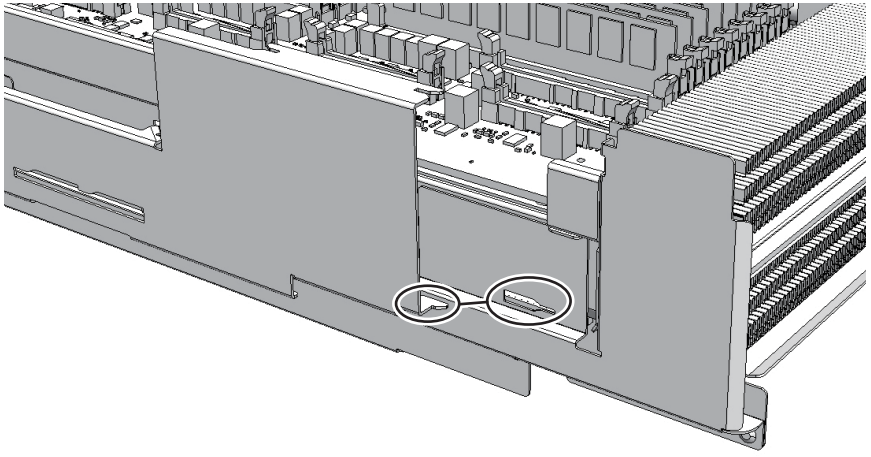


Figure 7-63 CPU memory unit upper and positions of the clips on the side guide (for the SPARC M10-4S with a FRAME-B CPU memory unit)

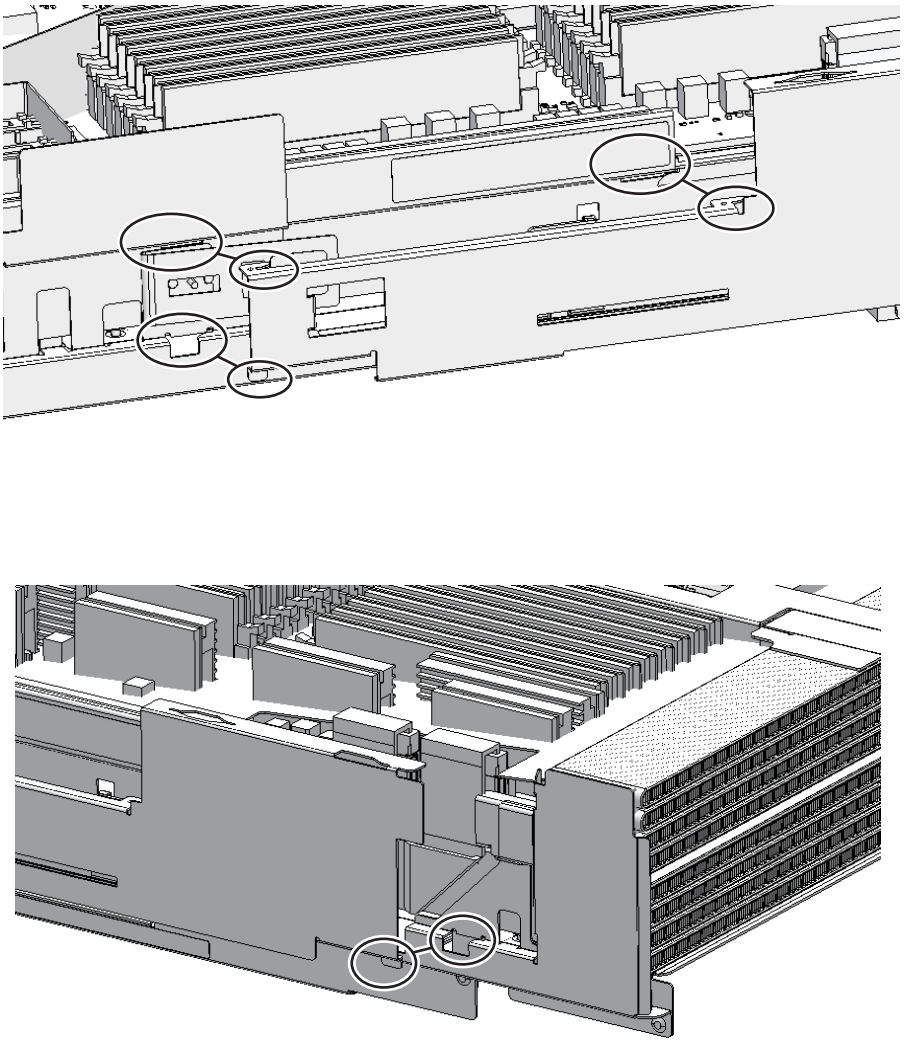
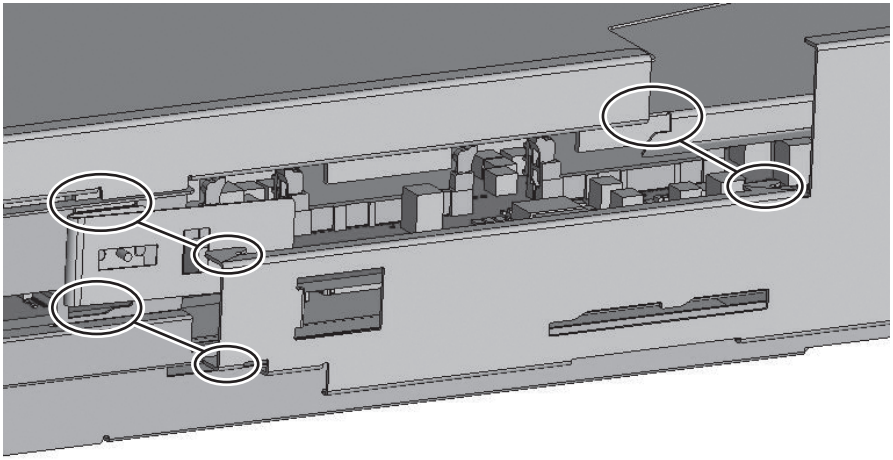


Figure 7-64 Filler unit of the CPU memory unit upper and positions of the clips on the side guide (for the SPARC M10-4/M10-4S with a FRAME-A CPU memory unit)



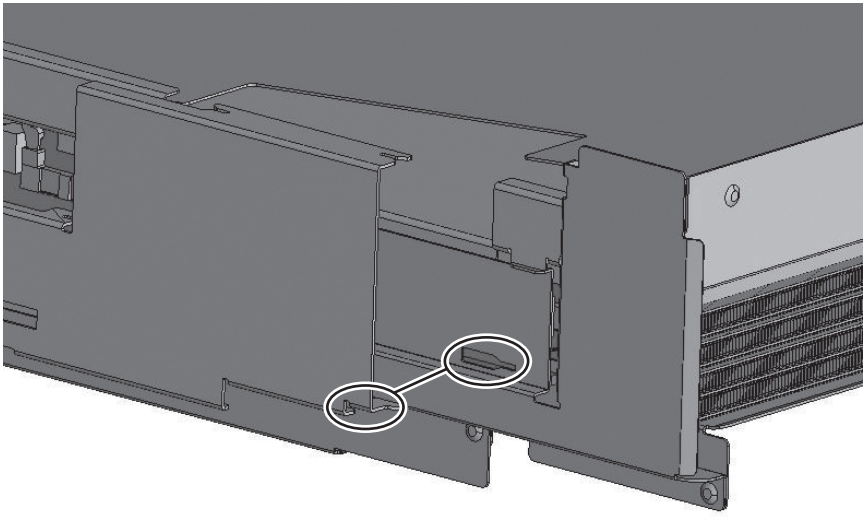
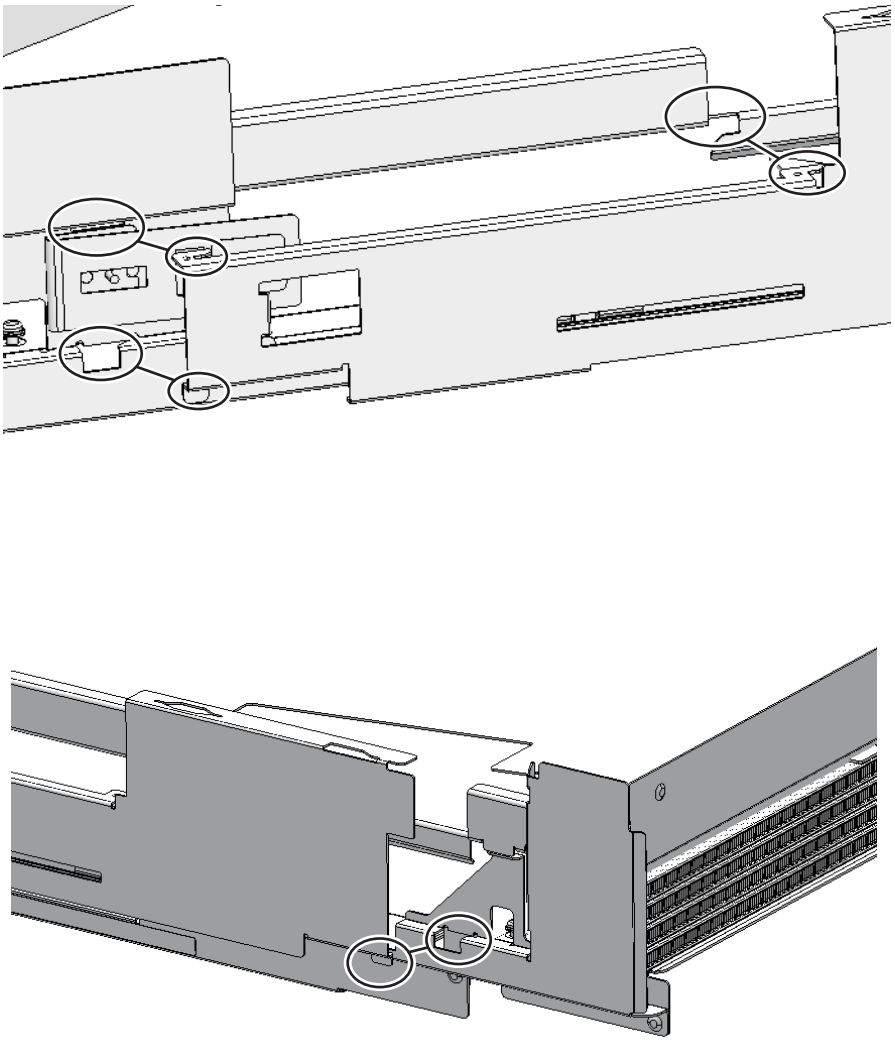


Figure 7-65 Filler unit of the CPU memory unit upper and positions of the clips on the side guide (for the SPARC M10-4S with a FRAME-B CPU memory unit)



5. **Install the top-side cover of the CPU memory unit.**
6. **Install the CPU memory unit lower in the chassis.**
   For details, see "7.5.3 Installing the CPU memory unit lower."

7.5.3 Installing the CPU memory unit lower

1. **Install the CPU memory unit upper or a filler unit for a CPU memory unit upper.**
   For details, see "7.5.2 Installing the CPU memory unit upper."
2. **Insert the CPU memory unit lower into the chassis while supporting it from below with one hand.**
3. **Raise the right and left levers of the CPU memory unit lower to secure it.**

Note - If the CPU memory unit lower is inserted as far as it will go, it may not be possible to lift the lever. Lift the lever just before the CPU memory unit lower hits the rear and then push it fully home.

7.5.4 Restoring the chassis

1. **If a crossbar unit was mounted, install the mounting frame and then tighten the three screws.**
2. **If any crossbar units were mounted, reinstall all of them.**
   For details, see "9.5 Installing a Crossbar Unit."
3. **Install all the PCIe card cassettes.**
   For details, see "13.6.2 Installing a PCI Express card cassette."

Note - Reinstall the PCIe card cassettes in their original positions by referring to the notes that you made prior to the start of maintenance.

---

4. **Connect all the cables for the external interface.**
   The cables to be connected are as follows.
   - Interface cable connected to the PCIe card
   - Crossbar cables (If equipment rack model 26xx or equipment rack model 16xx is used, connect them in step 6.)
   - XSCF BB control cable
   - XSCF DUAL control cable
   - XSCF-LAN cable
   - Serial cable
   - LAN cable
   - SAS cable
   - USB cable

Note - Reinstall the cables in the correct positions by referring to the notes you made before starting maintenance.

5. **Lift the cable support to fix it.**
   For details, see "6.5.2 Fixing the cable support."

   If you are not using equipment rack model 26xx or equipment rack model 16xx, the procedure ends here. You do not have to perform step 6.

6. **Connect the crossbar cables to the cable support.**
   Perform this procedure only when equipment rack model 26xx or equipment rack model 16xx is used. The procedure may vary depending on the model of the equipment rack.

   Procedure when equipment rack model 26xx is used

   a. **Remove the hook-and-loop fastener of the crossbar cables from the cable holder.**

   b. **Remove the screw securing the cable holder, and then rotate the cable holder through 180 degrees to install it on the supporting column at the rear of the rack.**

   c. **Connect all the crossbar cables to the crossbar unit.**

   d. **Use the hook-and-loop fastener to fix the crossbar cables to the cable support.**

Note - Connect the crossbar cables in their original positions by referring to the notes that you made before the start of maintenance.

Procedure when equipment rack model 16xx is used

a. **Remove the crossbar cables from the hook-and-loop fastener installed on the supporting column on the rear of the rack.**

b. **Connect all the crossbar cables to the crossbar unit.**

c. **Use the hook-and-loop fastener to fix the crossbar cables to the cable support.**

Note - Connect the crossbar cables in their original positions by referring to the notes that you made before the start of maintenance.

7.6 Restoring the System

This section describes the procedure for restoring the system after a CPU memory unit is replaced, expanded, or reduced. The restoration procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

7.6.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is incorporated into the physical partition, and the physical partition is powered on.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   02: PPAR-ID of the destination where the chassis to start the diagnosis is connected (You can specify only one of these.)

```
XSCF> diagxbu -y -b 00 -p 02
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Incorporate the chassis, in which the CPU memory unit requiring maintenance is mounted, into the physical partition.**
   For details, see "6.2 Incorporating a Chassis into a Physical Partition."
6. **Close the rack door.**

7.6.2 Inactive/Cold maintenance

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

When the system is configured without a hardware RAID

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

   To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Switch the mode switches of the master chassis and those chassis whose XSCFs are in the standby state to Locked mode.**
   - **For a building block configuration (without crossbar box)**
     Switch the mode switches of BB-ID#00 and #01 to Locked mode.
   - **For a building block configuration (with crossbar box)**
     Switch the mode switches of BB-ID#80 and #81 to Locked mode.
6. **Execute the showstatus command to confirm that the CPU memory unit is operating normally after maintenance.**
   If there is no problem, nothing is displayed.

```
XSCF> showstatus
```

7. **Execute the showhardconf command to check the hardware configuration and the status of each component.**
   Confirm that no asterisk (*) is displayed in front of each component.

```
XSCF> showhardconf
```

8. **Start the system.**
   For details, see "6.4.1 Starting the system with an XSCF command" or "6.4.2 Starting the system from the operation panel."
9. **Close the rack door.**

When the system is configured with a hardware RAID

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

The example below specifies the following:

00: BB-ID of the chassis to start the diagnosis

01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Execute the setpparparam command to deactivate the Autoboot function of the control domain.**
In the following example, PPAR-ID 0 is set for Auto boot.

```
XSCF> setpparparam -p 0 -s bootscript "setenv auto-boot? false"
```

6. **Execute the setpparmode command to deactivate the Autoboot function of the guest domain.**
In the following example, PPAR-ID 0 is set for Auto boot.

```
XSCF> setpparmode -p 0 -m guestboot=off
```

7. **Start the system.**
For details, see "6.4.1 Starting the system with an XSCF command" or "6.4.2 Starting the system from the operation panel."
8. **The ok prompt appears.**
9. **Enable the RAID volume to check the status.**
For details, see "14.2.11 Re-enabling a hardware RAID volume" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.
10. **Execute the setpparparam command to activate the Autoboot function of the control domain.**
In the following example, PPAR-ID 0 is set for Auto boot.

```
XSCF> setpparparam -p 0 -s bootscript "setenv auto-boot? true"
```

11. **Switch the mode switches of the master chassis and those chassis whose XSCFs are in the standby state to Locked mode.**
- **For a building block configuration (without crossbar box)**

Switch the mode switches of BB-ID#00 and #01 to Locked mode.

- **For a building block configuration (with crossbar box)**
  Switch the mode switches of BB-ID#80 and #81 to Locked mode.

12. **Execute the showstatus command to confirm that the CPU memory unit is operating normally after maintenance.**
    If there is no problem, nothing is displayed.

```
XSCF> showstatus
```

13. **Execute the showhardconf command to check the hardware configuration and the status of each component.**
    Confirm that no asterisk (*) is displayed in front of each component.

```
XSCF> showhardconf
```

14. **Close the rack door.**

7.6.3 System-stopped maintenance

When the system is configured without a hardware RAID

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

   For a single-chassis configuration, you do not have to incorporate the chassis. Proceed to step 4.

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected

(You can specify one or more of these.)

To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the restoreconfig command to restore the XSCF setting information only when the CPU memory unit lower in a singe-chassis configuration has been replaced.**
   If the CPU memory unit lower is has not been replaced, restoration is not necessary. Proceed to step 5.

   a. **Log in to the XSCF shell.**

Note - If you cannot log in with an XSCF user account and password, use the default user account of the XSCF to log in to the XSCF. For details, see "6.3 Logging In to the XSCF" in the *Fujitsu M10/SPARC M10 Systems Installation Guide*.

---

   b. **Execute the restoreconfig command to restore the XSCF setting information that has been saved with the dumpconfig command.**
   For details, see "10.9.3 Restoring XSCF setting information" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

```
XSCF> restoreconfig
```

   c. **Execute the version command to confirm the firmware version information.**

   If the version does not match the one before the replacement, update the firmware.
   For details, see "16.1.3 Updating firmware" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

5. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

6. **Execute the testsb command to confirm that the CPU memory unit requiring maintenance is normally recognized.**
   For a building block configuration, you do not have to execute the testsb command. Proceed to step 7.

   When you input optional "-y" for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board 00-0.

```
XSCF> testsb -v -y -s 00-0
```

7. **Execute the showstatus command to confirm that the CPU memory unit is operating normally after maintenance.**
   If there is no problem, nothing is displayed.

```
XSCF> showstatus
```

8. **Execute the showhardconf command to check the hardware configuration and the status of each component.**
   Confirm that no asterisk (*) is displayed in front of each component.

```
XSCF> showhardconf
```

9. **Execute the showdate command to confirm the XSCF time.**
   There is no need to set the time if the NTP server is set to the XSCF. Proceed to step 11.

```
XSCF> showdate
```

10. **If the XSCF time is different from the current time, execute the setdate command to set the time.**
    Specify the time in either of the following formats:

yyyy.MM.DD-hh:mm:ss	year.month.day-hour (24-hour clock):minute:second
MMDDhhmmyyyy.ss	monthdayhour (24-hour clock) minuteyear.second

    In the following example, "October 20, 2013 16:59:00" is specified.

```
XSCF> setdate -s 102016592013.00
```

11. **Start the system.**
    For details, see "6.4.1 Starting the system with an XSCF command" or "6.4.2 Starting the system from the operation panel."
12. **Close the rack door.**

When the system is configured with a hardware RAID

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

   For a single-chassis configuration, you do not have to incorporate the chassis. Proceed to step 4.

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

   To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the restoreconfig command to restore the XSCF setting information only when the CPU memory unit lower in a singe-chassis configuration has been replaced.**
   If the CPU memory unit lower is has not been replaced, restoration is not necessary. Proceed to step 5.

   a. **Log in to the XSCF shell.**

Note - If you cannot log in with an XSCF user account and password, use the default user account of the XSCF to log in to the XSCF. For details, see "6.3 Resetting the System" in the *Fujitsu M10/SPARC M10 Systems Installation Guide*.

---

   b. **Execute the restoreconfig command to restore the XSCF setting information that has been saved with the dumpconfig command.**
   For details, see "6.3 Logging In to the XSCF" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

```
XSCF> restoreconfig
```

   c. **Execute the version command to confirm the firmware version information.**

   If the version does not match the one before the replacement, update the firmware.
   For details, see "16.1.3 Updating firmware" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

5. **Execute the showlogs command to confirm that the system is operating**

normally.

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

6. **Execute the testsb command to confirm that the CPU memory unit requiring maintenance is normally recognized.**
   For a building block configuration, you do not have to execute the testsb command. Proceed to step 7.

   When you input optional "-y" for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board 00-0.

```
XSCF> testsb -v -y -s 00-0
```

7. **Execute the setpparparam command to deactivate the Autoboot function of the control domain.**
   In the following example, PPAR-ID 0 is set for Auto boot.

```
XSCF> setpparparam -p 0 -s bootscript "setenv auto-boot? false"
```

8. **Execute the setpparmode command to deactivate the Autoboot function of the guest domain.**
   In the following example, PPAR-ID 0 is set for Auto boot.

```
XSCF> setpparmode -p 0 -m guestboot=off
```

9. **Start the system.**
   For details, see "6.4.1 Starting the system with an XSCF command" or "6.4.2 Starting the system from the operation panel."
10. **The ok prompt appears.**
11. **Enable the RAID volume to check the status.**
    For details, see "14.2.11 Re-enabling a hardware RAID volume" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.
12. **Execute the setpparmode command to activate the Autoboot function of the guest domain.**
    In the following example, PPAR-ID 0 is set for Auto boot.

```
XSCF> setpparmode -p 0 -m guestboot=on
```

13. **Execute the showstatus command to confirm that the CPU memory unit is operating normally after maintenance.**

If there is no problem, nothing is displayed.

```
XSCF> showstatus
```

14. **Execute the showhardconf command to confirm the hardware configuration and the status of each CPU memory unit.**
    Confirm that no asterisk (*) is displayed in front of each component.

```
XSCF> showhardconf
```

15. **Execute the showdate command to confirm the XSCF time.**
    There is no need to set the time if the NTP server is set to the XSCF. Proceed to step 17.

```
XSCF> showdate
```

16. **If the XSCF time is different from the current time, execute the setdate command to set the time.**
    Specify the time in either of the following formats:

yyyy.MM.DD-hh:mm:ss	year.month.day-hour (24-hour clock):minute:second
MMDDhhmmyyyy.ss	monthdayhour (24-hour clock) minuteyear.second

    In the following example, "October 20, 2013 16:59:00" is specified.

```
XSCF> setdate -s 102016592013.00
```

17. **Close the rack door.**

Chapter 8

Maintaining the Memory

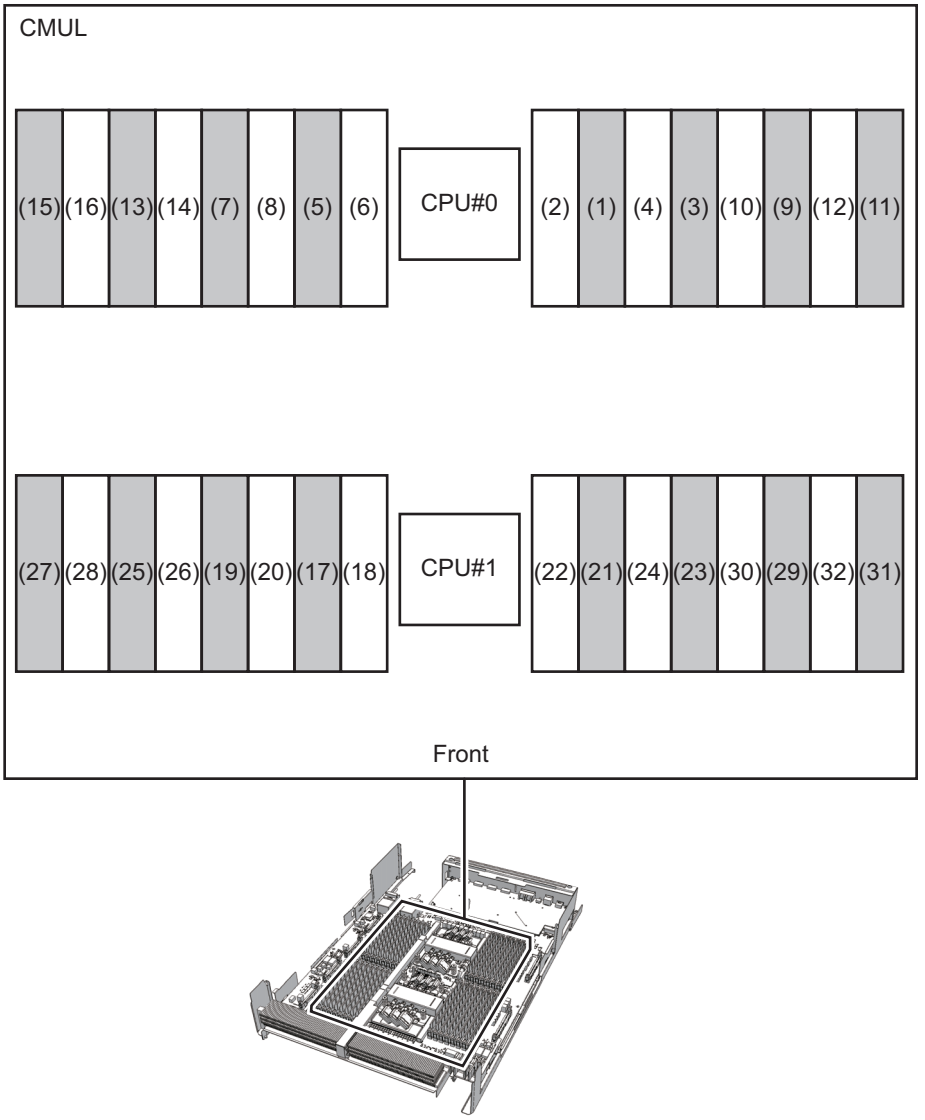
This chapter describes the procedure for maintaining the memory mounted on the SPARC M10-4/M10-4S. Memory can be replaced, expanded, and reduced.

- Memory Configuration
- Memory Configuration Rules
- Before Maintaining Memory
- Enabling the Removal of Memory
- Removing Memory
- Installing Memory
- Restoring the System

8.1 Memory Configuration

This section describes the configuration and location of memory.
A maximum of 32 memory modules can be implemented in one CPU memory unit. One chassis can contain two CPU memory units; the CPU memory unit upper and lower. Therefore, the maximum number of memory modules that can be implemented in one chassis is 64.
Figure 8-1 shows the memory locations and the memory groups of the CPU memory unit lower, while Figure 8-2 shows those of the CPU memory unit upper.

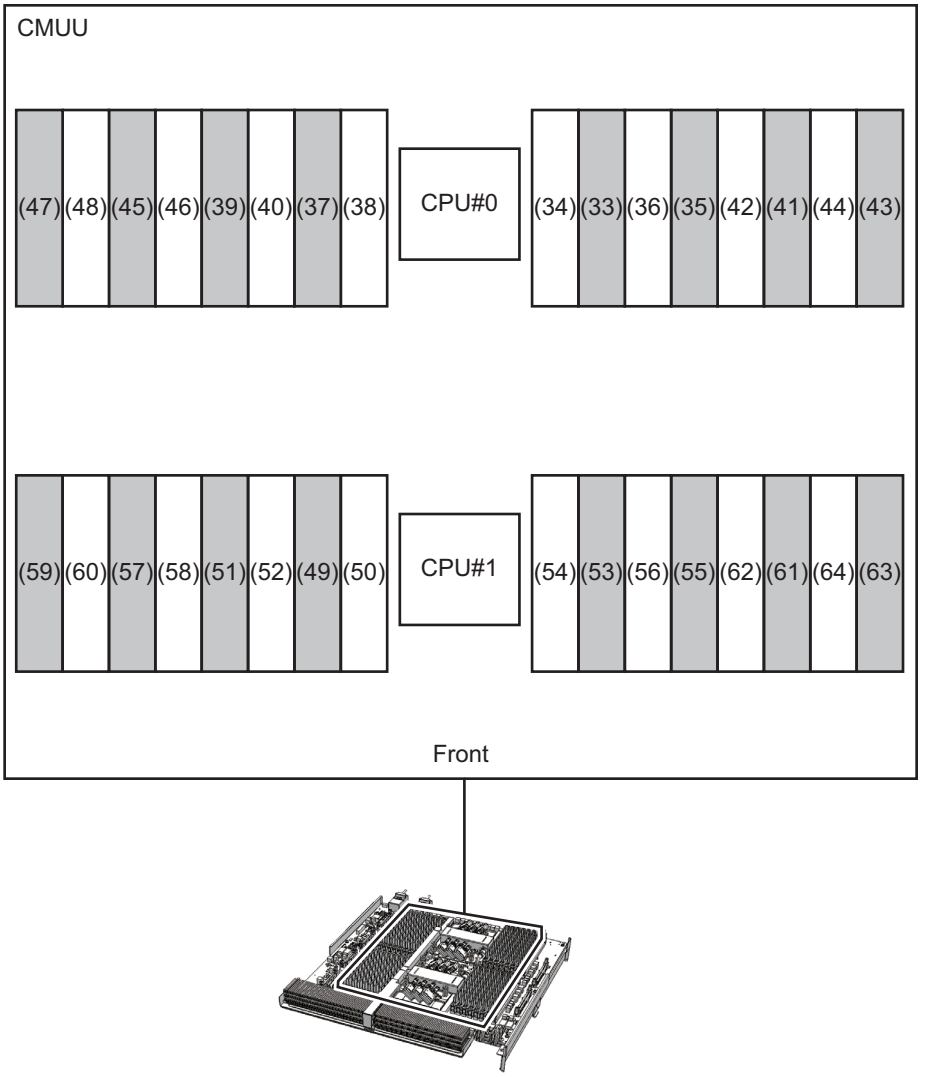
Figure 8-1 Memory locations (CPU memory unit lower)



Location number	Component	Group
1	Memory (CMUL/MEM#00A)	A
2	Memory (CMUL/MEM#00B)	B
3	Memory (CMUL/MEM#01A)	A
4	Memory (CMUL/MEM#01B)	B
5	Memory (CMUL/MEM#02A)	A
6	Memory (CMUL/MEM#02B)	B

Location number	Component	Group
7	Memory (CMUL/MEM#03A)	A
8	Memory (CMUL/MEM#03B)	B
9	Memory (CMUL/MEM#04A)	A
10	Memory (CMUL/MEM#04B)	B
11	Memory (CMUL/MEM#05A)	A
12	Memory (CMUL/MEM#05B)	B
13	Memory (CMUL/MEM#06A)	A
14	Memory (CMUL/MEM#06B)	B
15	Memory (CMUL/MEM#07A)	A
16	Memory (CMUL/MEM#07B)	B
17	Memory (CMUL/MEM#10A)	A
18	Memory (CMUL/MEM#10B)	B
19	Memory (CMUL/MEM#11A)	A
20	Memory (CMUL/MEM#11B)	B
21	Memory (CMUL/MEM#12A)	A
22	Memory (CMUL/MEM#12B)	B
23	Memory (CMUL/MEM#13A)	A
24	Memory (CMUL/MEM#13B)	B
25	Memory (CMUL/MEM#14A)	A
26	Memory (CMUL/MEM#14B)	B
27	Memory (CMUL/MEM#15A)	A
28	Memory (CMUL/MEM#15B)	B
29	Memory (CMUL/MEM#16A)	A
30	Memory (CMUL/MEM#16B)	B
31	Memory (CMUL/MEM#17A)	A
32	Memory (CMUL/MEM#17B)	B

Figure 8-2 Memory locations (CPU memory unit upper)



Location number	Component	Group
33	Memory (CMUU/MEM#00A)	A
34	Memory (CMUU/MEM#00B)	B
35	Memory (CMUU/MEM#01A)	A
36	Memory (CMUU/MEM#01B)	B
37	Memory (CMUU/MEM#02A)	A
38	Memory (CMUU/MEM#02B)	B
39	Memory (CMUU/MEM#03A)	A

Location number	Component	Group
40	Memory (CMUU/MEM#03B)	B
41	Memory (CMUU/MEM#04A)	A
42	Memory (CMUU/MEM#04B)	B
43	Memory (CMUU/MEM#05A)	A
44	Memory (CMUU/MEM#05B)	B
45	Memory (CMUU/MEM#06A)	A
46	Memory (CMUU/MEM#06B)	B
47	Memory (CMUU/MEM#07A)	A
48	Memory (CMUU/MEM#07B)	B
49	Memory (CMUU/MEM#10A)	A
50	Memory (CMUU/MEM#10B)	B
51	Memory (CMUU/MEM#11A)	A
52	Memory (CMUU/MEM#11B)	B
53	Memory (CMUU/MEM#12A)	A
54	Memory (CMUU/MEM#12B)	B
55	Memory (CMUU/MEM#13A)	A
56	Memory (CMUU/MEM#13B)	B
57	Memory (CMUU/MEM#14A)	A
58	Memory (CMUU/MEM#14B)	B
59	Memory (CMUU/MEM#15A)	A
60	Memory (CMUU/MEM#15B)	B
61	Memory (CMUU/MEM#16A)	A
62	Memory (CMUU/MEM#16B)	B
63	Memory (CMUU/MEM#17A)	A
64	Memory (CMUU/MEM#17B)	B

8.2 Memory Configuration Rules

This section describes the memory mounting rules and the method for checking memory information.

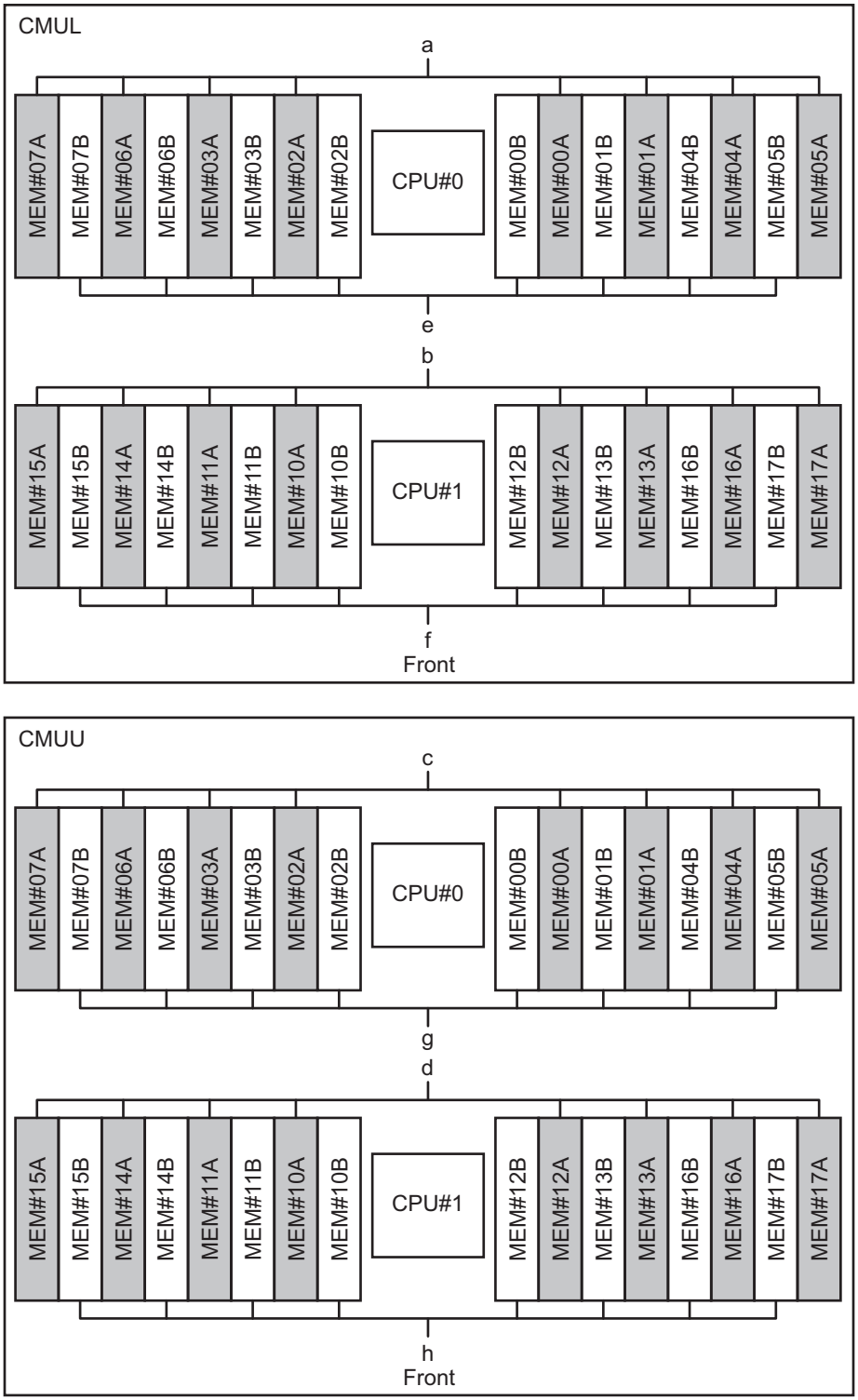
8.2.1 Memory mounting rules

Install the memory in accordance with the following rules:

- Mount memory in units of eight modules.
- Within a unit of eight modules, all the memory modules must be of the same capacity and rank.
- For memory for one CPU, use only R-DIMM (Registered DIMM: 8 GB/16 GB/32 GB) or only LR-DIMM (Load Reduced DIMM: 64 GB).
- First mount memory group A and then mount memory group B.

Figure 8-3 shows the mounting locations of all the memory modules. Each eight-module unit of mounted memory is indicated by letters a to f. Table 8-1, Table 8-2 and Table 8-3 list the supported memory installation configurations. The memory mounting locations may vary depending on the number of mounted CPU memory units. Refer to this figure and table when you expand or reduce memory.
As for the mounting order of memory group B, give priority to using a uniform memory type of either R-DIMM or LR-DIMM for one CPU over the memory mounting patterns in Table 8-1, Table 8-2, and Table 8-3.

Figure 8-3 Mounting locations and units of memory



When only the CPU memory unit lower is mounted

Table 8-1 Memory mounting configurations (CMUL only)

Number of memory modules	Mounted memory			
8	a in Figure 8-3	-	-	-
16	a in Figure 8-3	b in Figure 8-3	-	-
24	a in Figure 8-3	b in Figure 8-3	e in Figure 8-3	-
32	a in Figure 8-3	b in Figure 8-3	e in Figure 8-3	f in Figure 8-3

When both the CPU memory unit lower and the CPU memory unit upper are mounted

Table 8-2 Memory mounting patterns (CMUL and CMUU)

Number of memory modules	Mounted memory							
8	a in Figure 8-3	-	-	-	-	-	-	-
16	a in Figure 8-3	b in Figure 8-3	-	-	-	-	-	-
24	a in Figure 8-3	b in Figure 8-3	c in Figure 8-3	-	-	-	-	-
32	a in Figure 8-3	b in Figure 8-3	c in Figure 8-3	d in Figure 8-3	-	-	-	-
40	a in Figure 8-3	b in Figure 8-3	c in Figure 8-3	d in Figure 8-3	e in Figure 8-3	-	-	-
48	a in Figure 8-3	b in Figure 8-3	c in Figure 8-3	d in Figure 8-3	e in Figure 8-3	f in Figure 8-3	-	-
56	a in Figure 8-3	b in Figure 8-3	c in Figure 8-3	d in Figure 8-3	e in Figure 8-3	f in Figure 8-3	g in Figure 8-3	-
64	a in Figure 8-3	b in Figure 8-3	c in Figure 8-3	d in Figure 8-3	e in Figure 8-3	f in Figure 8-3	g in Figure 8-3	h in Figure 8-3

When expanding a CPU memory unit upper to a chassis in which only a CPU memory unit lower is mounted

If you mount memory by expanding a CPU memory unit upper to a chassis in which only a CPU memory unit lower is mounted, you do not have to remove the memory mounted on the CPU memory unit lower.

Install it by observing the mounting configurations shown in either Table 8-3or Table 8-2.

Table 8-3 Memory mounting configurations (CMUL and expanded CMUU)

Number of memory modules	Mounted memory							
8	a in Figure 8-3	-						
16	a in Figure 8-3	b in Figure 8-3	-	-	-	-	-	-
24	a in Figure 8-3	b in Figure 8-3	e in Figure 8-3	-	-	-	-	-
32	a in Figure 8-3	b in Figure 8-3	e in Figure 8-3	f in Figure 8-3	-	-	-	-
40	a in Figure 8-3	b in Figure 8-3	e in Figure 8-3	f in Figure 8-3	c in Figure 8-3	-	-	-
48	a in Figure 8-3	b in Figure 8-3	e in Figure 8-3	f in Figure 8-3	c in Figure 8-3	d in Figure 8-3	-	-
56	a in Figure 8-3	b in Figure 8-3	e in Figure 8-3	f in Figure 8-3	c in Figure 8-3	d in Figure 8-3	g in Figure 8-3	-
64	a in Figure 8-3	b in Figure 8-3	e in Figure 8-3	f in Figure 8-3	c in Figure 8-3	d in Figure 8-3	g in Figure 8-3	h in Figure 8-3

8.2.2 Checking memory information

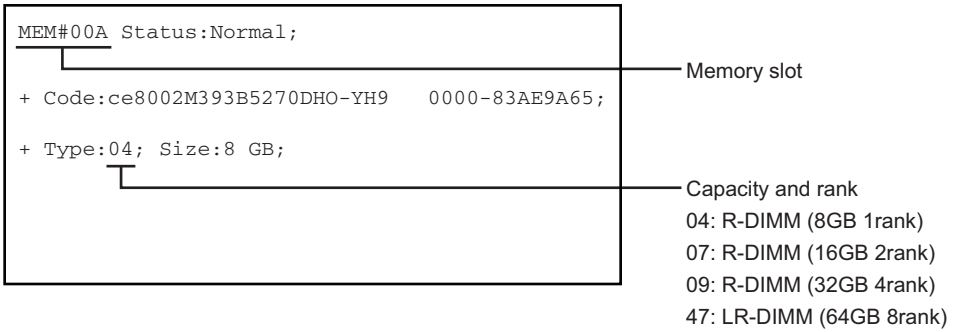
Check the type and size of the memory by using the showhardconf command of the XSCF firmware.

1. **Log in to the XSCF shell.**
2. **Execute the showhardconf command to check the memory information.**
   The capacity and rank of the memory are displayed.

```
XSCF> showhardconf
----------------------Ommitted-----------------------
    MBU Status:Normal; Ver:2004h; Serial:USDA-P00007 ;
        + FRU-Part-Number:CA20366-B10X 002AB/LGA-MBU -01 ;
        + Power_Supply_System: Dual ;
        + Memory_Size:32 GB;
        CPU#0 Status:Normal; Ver:4142h; Serial: 00010448;
            + Freq:2.800 GHz; Type:0x10;
            + Core:16; Strand:2;
        MEM#00A Status:Normal;
            + Code:ce8002M393B5270DH0-YH9  0000-85A8EFD9;
            + Type:01; Size:4 GB;
        MEM#01A Status:Normal;
```

```
        + Code:ce8002M393B5270DH0-YH9  0000-85A8EF57;
        + Type:01; Size:4 GB;
    MEM#02A Status:Normal;
        + Code:ce8002M393B5270DH0-YH9  0000-85A8EF65;
        + Type:01; Size:4 GB;
    MEM#03A Status:Normal;
        + Code:ce8002M393B5270DH0-YH9  0000-85A8EE2C;
        + Type:01; Size:4 GB;
```

Figure 8-4 Viewing memory information



8.3 Before Maintaining Memory

This section describes the types and flow of maintenance of the memory, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

8.3.1 Types of maintenance

Table 8-4 lists the types of memory maintenance. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 8-4 Types of maintenance for memory

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped
Single-chassis configuration	Unsupported	Unsupported	Unsupported	Supported	Supported

Table 8-4 Types of maintenance for memory *(continued)*

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped
Building block configuration	Unsupported	Supported (*2)	Unsupported	Supported	Supported

*1: For a single-chassis configuration, the inactive/cold maintenance procedure is the same as that for stopping the system, therefore see the procedure for system-stopped maintenance.
*2: It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition.

8.3.2 Maintenance flow

Table 8-5 lists the sequence of the maintenance procedure for memory. The procedure for expanding memory is the same as that for installing memory. The procedure for reducing memory is the same as that for removing memory.

Table 8-5 Maintenance flow

Details of update process		Replacement	Expansion	Reduction
1	Preparation	8.4	8.4	8.4
2	Removing a CPU memory unit	7.4	7.4	7.4
3	Removing memory	8.5	-	8.5
4	Installing memory	8.6	8.6	-
5	Installing a CPU memory unit	7.5	7.5	7.5
6	Restoring the system	8.7	8.7	8.7

8.3.3 Precautions for replacement

Note the following points when replacing memory:

- When you replace a memory module, make sure that you install the new module in the same position as the original one.

8.3.4 Precautions for installation

Note the following points when expanding memory:

- Observe the memory installation rules when you expand memory. For details, see "8.2.1 Memory mounting rules."
- Apply XCP 2080 or later when you expand 64 GB memory.

8.3.5 Precautions for removal

Note the following points when removing memory:

- Observe the memory installation rules when you remove memory. For details, see "8.2.1 Memory mounting rules."

8.4 Enabling the Removal of Memory

This section describes the preparations that must be completed prior to the removal of memory. The preparation procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

8.4.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

Note - When you add or remove CPU memory units, confirm that no error has occurred.

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Release the building block, in which the memory requiring maintenance is mounted, from the physical partition.**
   For details, see "5.2 Releasing a Chassis from the Physical Partition."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

   For details, see "5.1 Releasing an FRU from the System with the replacefru Command."
7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

8.4.2 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

Note - When you add or remove CPU memory units, confirm that no error has occurred.

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."

5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

   For details, see "5.1 Releasing an FRU from the System with the replacefru Command."
7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

8.4.3 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

Note - When you add or remove CPU memory units, confirm that no error has occurred.

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Stop the entire system.**
   For details, see "5.4 Stopping the Entire System."
6. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

8.5 Removing Memory

This section describes the procedure for removing memory. Perform reduction using the same procedure.
Enable the removal of the memory before you attempting to remove it. For details, see "8.4 Enabling the Removal of Memory."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

8.5.1 Accessing memory

1. **Perform the preparations that must be completed prior to removing the CPU memory unit.**
   For details, see "7.4.1 Accessing a CPU memory unit."
2. **Remove the CPU memory unit.**
   To remove the memory mounted on the CPU memory unit upper, see steps 1 through 3 as described in "7.4.2 Removing the CPU memory unit lower."

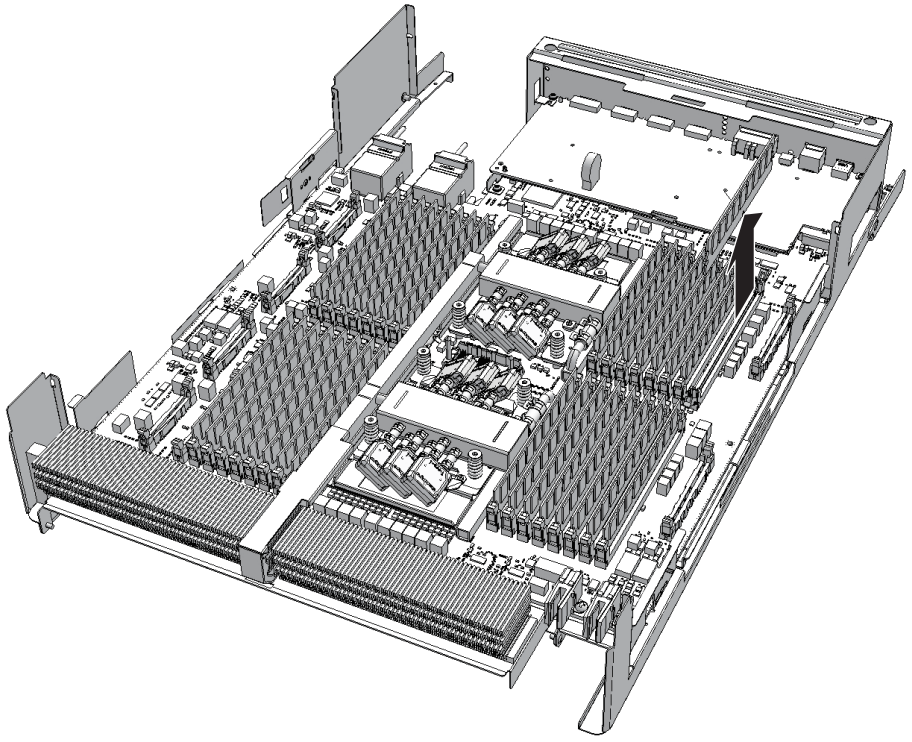
   To remove the memory mounted on the CPU memory unit lower, see "7.4.2 Removing the CPU memory unit lower" and steps 1 through 10 in "7.4.3 Removing the CPU memory unit upper."

8.5.2 Removing memory

1. **Open the clip of the memory slot outwards and remove the memory by pulling it straight up.**

Note - Place the removed memory on a grounded static-removal ESD mat.

Figure 8-5 Removing memory



8.6 Installing Memory

This section describes the procedure for installing a memory module. Perform expansion using the same procedure.

8.6.1 Installing memory

1. **Place the memory module by aligning the notched section with the corresponding part of the memory slot connector.**
2. **Push the memory module into the slot evenly.**

Note - Confirm that the clip of the memory slot has returned to its original position.

8.6.2 Restoring the chassis

1. **Install the CPU memory unit.**
   If you have installed the memory of the CPU memory unit upper, see "7.5.2 Installing the CPU memory unit upper."

   If you have installed the memory of the CPU memory unit lower, see "7.5.2 Installing the CPU memory unit upper" and "7.5.3 Installing the CPU memory unit lower."
2. **Restore the chassis.**
   For details, see "7.5.4 Restoring the chassis."

8.7 Restoring the System

This section describes the procedure for restoring the system after replacement, addition, and removal of memory. The restoration procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

8.7.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

---

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm**

that the chassis has been incorporated into the system.
For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
Diagnosis is performed when the system board of the chassis connected with the crossbar cables is incorporated into the physical partition, and the physical partition is powered on.

The example below specifies the following:

00: BB-ID of the chassis to start the diagnosis

02: PPAR-ID of the destination where the chassis to start the diagnosis is connected (You can specify only one of these.)

```
XSCF> diagxbu -y -b 00 -p 02
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Incorporate the chassis, in which the memory requiring maintenance is mounted, into the physical partition.**
For details, see "6.2 Incorporating a Chassis into a Physical Partition."

6. **Close the rack door.**

8.7.2 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**

For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

   To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

5. **Switch the mode switches of the master chassis and those chassis whose XSCFs are in the standby state to Locked mode.**
   - **For a building block configuration (without crossbar box)**
     Switch the mode switches of BB-ID#00 and #01 to Locked mode.
   - **For a building block configuration (with crossbar box)**
     Switch the mode switches of BB-ID#80 and #81 to Locked mode.

6. **Execute the showstatus command to confirm that there is no problem with the memory after the completion of maintenance.**

```
XSCF> showstatus
```

7. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

8. **Start the system.**
   For details, see "6.4.1 Starting the system with an XSCF command" or "6.4.2 Starting the system from the operation panel."

9. **Close the rack door.**

8.7.3 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Start the system.**
   For details, see "6.4.1 Starting the system with an XSCF command" or "6.4.2 Starting the system from the operation panel."
3. **Execute the testsb command to confirm that the memory requiring maintenance is recognized.**

```
XSCF> testsb -a
```

4. **Close the rack door.**

Chapter 9

Maintaining the Crossbar Units

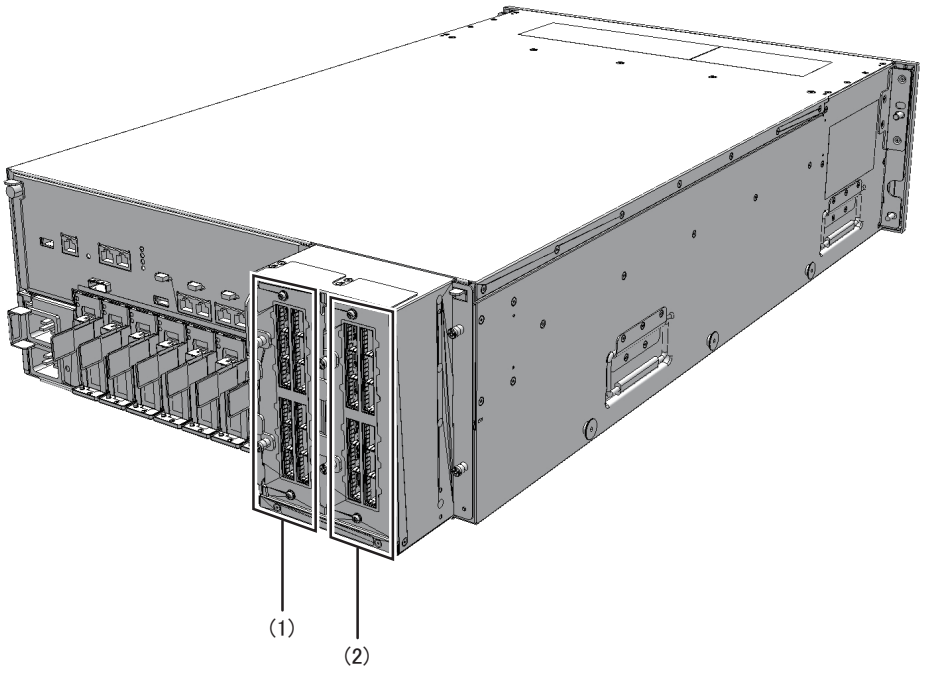
This chapter describes the procedure for maintaining the crossbar units mounted on a SPARC M10-4S.

- Configuration of the Crossbar Units
- Before Maintaining a Crossbar Unit
- Enabling the Removal of a Crossbar Unit
- Removing a Crossbar Unit
- Installing a Crossbar Unit
- Restoring the System

9.1 Configuration of the Crossbar Units

This section describes the configuration and the locations of the crossbar units.
The crossbar units of the SPARC M10-4S are connected to the crossbar units of other SPARC M10-4S units or to a crossbar box for system extension. Two crossbar units are mounted on a SPARC M10-4S. When performing maintenance, perform the work one unit at a time.

Figure 9-1 Location of crossbar units



Location number	Component
1	Crossbar unit (XBU#0)
2	Crossbar unit (XBU#1)

9.2 Before Maintaining a Crossbar Unit

This section describes the types and flow of maintenance of the crossbar units.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

9.2.1 Types of maintenance

Table 9-1 lists the types of maintenance for the crossbar units. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 9-1 Types of maintenance for the crossbar unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Unsupported	Supported (*)	Unsupported	Supported	Supported

*: It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition.

9.2.2 Maintenance flow

Table 9-2 lists the sequence of the maintenance procedure for the crossbar units.

Table 9-2 Maintenance flow

Details of update process		Replacement
1	Preparation	9.3
2	Removing the crossbar units	9.4
3	Installing the crossbar unit	9.5
4	Restoring the system	9.6

9.3 Enabling the Removal of a Crossbar Unit

This section describes preparation that must be completed prior to removing a crossbar unit. The procedure for the preparation varies depending on the maintenance type, as follows:

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

9.3.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Release the building block, in which the memory requiring maintenance is mounted, from the physical partition.**
For details, see "5.2 Releasing a Chassis from the Physical Partition."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

9.3.2 Inactive/Cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

9.3.3 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Stop the entire system.**
   For details, see "5.4 Stopping the Entire System."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

9.4 Removing a Crossbar Unit

This section describes the procedure for removing a crossbar unit.
Enable the removal of the crossbar unit before attempting to remove it. For details, see "9.3 Enabling the Removal of a Crossbar Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "5.4 Stopping the Entire System."

9.4.1 Accessing a crossbar unit

1. **Lower the cable support.**
   For details, see "5.5.1 Lowering the cable support."

Note - If the crossbar cables are fixed to the cable support with the hook-and-loop fastener, remove the hook-and-loop fastener.

---

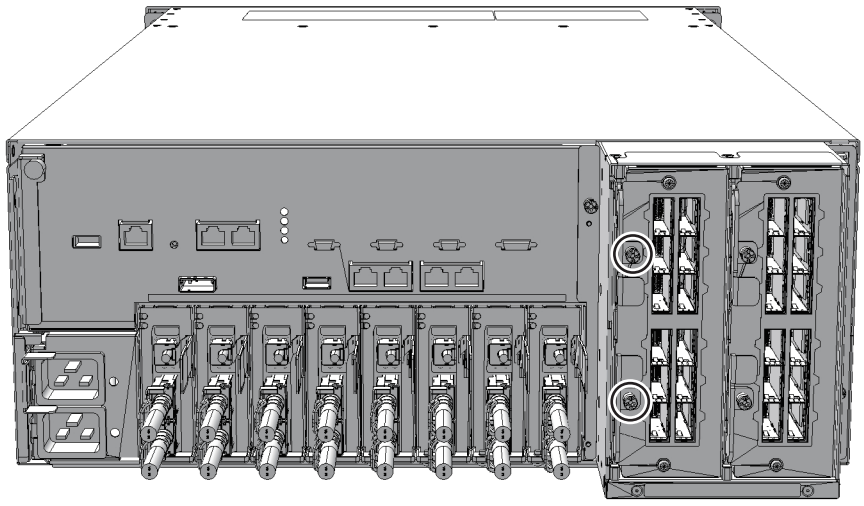
2. **Remove all the crossbar cables connected to the crossbar units requiring maintenance.**

Note - Make a note of the positions of the crossbar cables before disconnecting them to ensure that they are reinstalled correctly.

9.4.2 Removing a crossbar unit

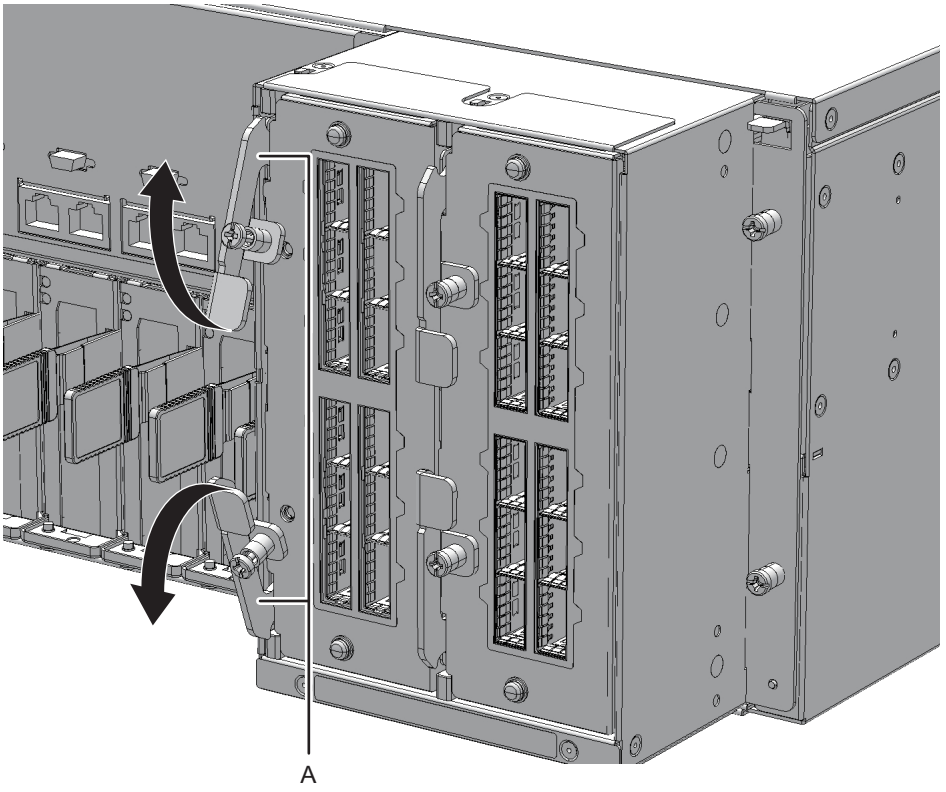
1. **Loosen the two screws securing the crossbar unit.**

Figure 9-2 Location of screws securing crossbar units



2. **Open the eject levers (A in the figure) upwards and downwards, respectively, and then pull the crossbar unit out of the CPU memory unit.**

Figure 9-3 Opening the eject levers



3. **Support the crossbar unit from below with one hand and carefully remove it from the mounting frame.**

Note - Place the removed crossbar unit on a grounded antistatic ESD mat.

9.5 Installing a Crossbar Unit

This section describes the procedure for installing a crossbar unit.

Note - When mounting a crossbar unit, check the connectors on both of the chassis and crossbar unit beforehand to confirm that no pin is bent and all the pins are neatly arranged in lines. If a crossbar unit is mounted with a bent pin in a connector, the chassis or crossbar unit may be damaged. Also, carefully proceed with the work to prevent any pin from being bent.

9.5.1 Installing a crossbar unit

1. **Open the eject levers of the crossbar unit.**
2. **Support the crossbar unit from below with one hand and then carefully insert it into the mounting frame.**
3. **Close the eject levers and tighten the two screws securing the crossbar unit.**

9.5.2 Restoring the chassis

1. **Connect all the crossbar cables to the crossbar unit.**

Note - Connect the crossbar cables in their original positions by referring to the notes that you made before the start of maintenance.

---

2. **Lift the cable support to fix it.**
   For details, see "6.5.2 Fixing the cable support."

9.6 Restoring the System

This section describes the procedure for restoring the system after installing the crossbar units. The restoration procedure differs depending on the maintenance type as follows:

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

9.6.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.

---

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is incorporated into the physical partition, and the physical partition is powered on.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   02: PPAR-ID of the destination where the chassis to start the diagnosis is connected (You can specify only one of these.)

```
XSCF> diagxbu -y -b 00 -p 02
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

5. **Incorporate the chassis, in which the CPU memory unit requiring maintenance is mounted, into the physical partition.**
   For details, see "6.2 Incorporating a Chassis into a Physical Partition."

6. **Close the rack door.**

9.6.2 Inactive/Cold maintenance

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**

For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

   To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

5. **Switch the mode switches of the master chassis and those chassis whose XSCFs are in the standby state to Locked mode.**
   - **For a building block configuration (without crossbar box)**
     Switch the mode switches of BB-ID#00 and #01 to Locked mode.
   - **For a building block configuration (with crossbar box)**
     Switch the mode switches of BB-ID#80 and #81 to Locked mode.

6. **Execute the showstatus command to confirm that there is no problem with the crossbar units after the completion of maintenance.**

```
XSCF> showstatus
```

7. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

8. **Start the system.**
   For details, see "6.4.1 Starting the system with an XSCF command" or "6.4.2 Starting the system from the operation panel."

9. **Close the rack door.**

9.6.3 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

   To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."
5. **Start the entire system.**
   For details, see "6.4 Starting the Entire System."
6. **Close the rack door.**

Chapter 10

Maintaining the Power Supply Units

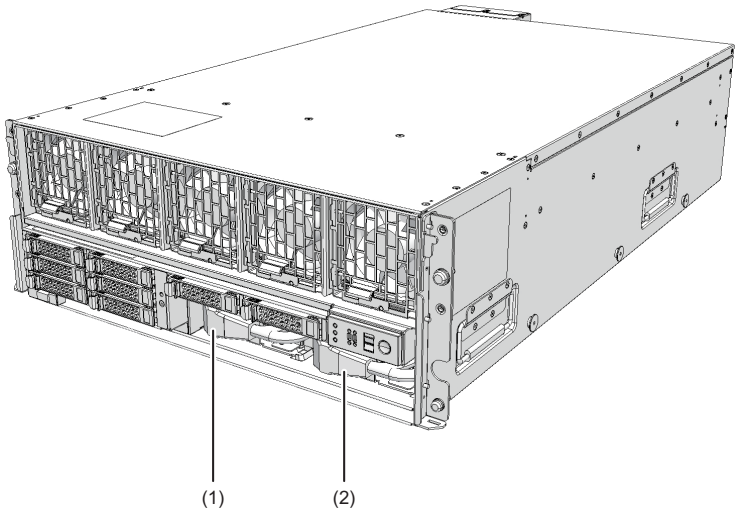
This chapter describes the procedure for maintaining the power supply units mounted in the SPARC M10-4/M10-4S.

- Configuration of the Power Supply Units
- Before Maintaining a Power Supply Unit
- Enabling the Removal of a Power Supply Unit
- Removing a Power Supply Unit
- Installing a Power Supply Unit
- Restoring the System

10.1 Configuration of the Power Supply Units

This section describes the configuration and the locations of the power supply units. The power supply units feed power to the individual components. The components can have the 1+1 redundant configuration. Active/hot maintenance can be performed.

Figure 10-1 Location of power supply unit



Location number	Component
1	Power supply unit (PSU#0)
2	Power supply unit (PSU#1)

10.2 Before Maintaining a Power Supply Unit

This section describes the types and flow of maintenance of the power supply units, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

10.2.1 Types of maintenance

Table 10-1 lists the types of maintenance for the power supply units. For the

definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 10-1 Types of maintenance for the power supply unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped
Single-chassis configuration	Supported	Unsupported	Supported	Supported	Supported
Building block configuration	Supported (*2)	Supported (*3)	Supported	Supported	Supported

*1: For a single-chassis configuration, the inactive/cold maintenance procedure is the same as that for stopping the system, therefore see the procedure for system-stopped maintenance.
*2: Active/hot replacement can be performed only with a redundant configuration.
*3: It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition.

10.2.2 Maintenance flow

Table 10-2 lists the sequence of the maintenance procedure for the power supply units.

Table 10-2 Maintenance flow

Details of update process		Replacement
1	Preparation	10.3
2	Removing a power supply unit	10.4
3	Installing a power supply unit	10.5
4	Restoring the system	10.6

10.2.3 Precautions for replacement

Note the following points when replacing a power supply unit:

- There are two power supply units. Thus, the system can continue operating even if one of the units fails. Do not, however, operate the system for an extended period while one unit has failed.
- When replacing multiple power supply units, replace one unit at a time. If redundancy of the power supply unit cannot be assured, then system-stopped maintenance must be performed.
- Do not force push the power supply unit into its slot. Using excessive force may damage the component or the chassis.

10.3 Enabling the Removal of a Power Supply Unit

This section describes the preparations that must be completed prior to the removal of a power supply unit. The preparation procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

10.3.1 Active/Hot maintenance

Note - Active/hot maintenance is supported only for a redundant configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Execute the replacefru command to release the power supply unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

10.3.2 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Release the chassis, in which the power supply unit requiring maintenance is mounted, from the physical partition.**
For details, see "5.2 Releasing a Chassis from the Physical Partition."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

10.3.3 Inactive/Hot maintenance

For a single-chassis configuration

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Stop the entire system.**
For details, see "5.4 Stopping the Entire System."
6. **Execute the showpparstatus command to confirm that the physical partition requiring maintenance is powered off.**

```
XSCF> showpparstatus -a
```

7. **Execute the replacefru command to release the power supply unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

For a building-block configuration

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."

5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the power supply unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

10.3.4 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

10.3.5 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Stop the entire system.**
For details, see "5.4 Stopping the Entire System."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**
For a single-chassis configuration, you do not have to release the chassis. Proceed to step 7.

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

10.4 Removing a Power Supply Unit

This section describes the procedure for removing a power supply unit. Enable the removal of the power supply unit before attempting to remove it. For details, see "10.3 Enabling the Removal of a Power Supply Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

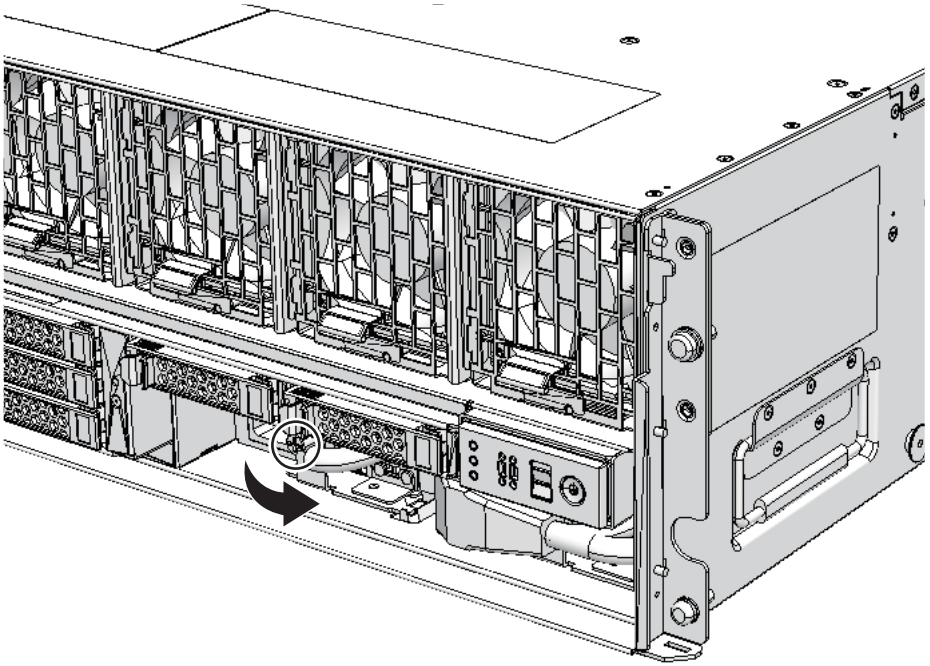
10.4.1 Accessing a power supply unit

1. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."

10.4.2 Removing a power supply unit

1. **Remove the power cord from the power supply unit requiring maintenance.**
2. **Loosen the screws securing the power supply unit and open the lever.**

Figure 10-2 Screws securing power supply unit



3. **Hold the lever and pull the power supply unit out of the chassis.**
4. **Support the power supply unit from below with one hand and remove it carefully from its slot.**

Note - Place the removed power supply unit on a grounded antistatic ESD mat.

10.5 Installing a Power Supply Unit

This section describes the procedure for installing a power supply unit.

10.5.1 Installing a power supply unit

1. **Support the power supply unit from below with one hand and insert it carefully into its slot.**

Note - Do not forcibly push the power supply unit into its slot. Using excessive force may damage the component or the chassis.

2. **Firmly push the power supply unit into its mounting position.**
3. **Close the lever and then tighten the screws.**
4. **Connect the power cords to the power supply unit.**

10.5.2 Restoring the chassis

1. **Connect the power cords to the PSU backplane unit of the chassis requiring maintenance.**
2. **Confirm that the LED (green) on the power supply unit is blinking.**
3. **Install the front cover.**
   For details, see "6.5.3 Installing the front cover."

10.6 Restoring the System

This section describes the procedure for restoring the system after installing a power supply unit. The restoration procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

10.6.1 Active/Hot maintenance

1. **Return to the operation of the XSCF firmware replacefru command to confirm that the power supply unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
2. **Execute the showstatus command to confirm that there is no problem with the power supply unit after the completion of maintenance.**

```
XSCF> showstatus
```

3. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

4. **Close the rack door.**

10.6.2 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

---

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**

For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Incorporate the chassis, in which the power supply unit requiring maintenance is mounted, into the physical partition.**
   For details, see "6.2 Incorporating a Chassis into a Physical Partition."
4. **Close the rack door.**

10.6.3 Inactive/Hot maintenance

For a single-chassis configuration

1. **Log in to the XSCF shell.**
2. **Return to the operation of the XSCF firmware replacefru command to confirm that the power supply unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Start the entire system.**
   For details, see "6.4 Starting the Entire System."
4. **Close the rack door.**

For a building-block configuration

1. **Log in to the XSCF shell.**
2. **Return to the operation of the XSCF firmware replacefru command to confirm that the power supply unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

10.6.4 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

---

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

10.6.5 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

   For a single-chassis configuration, you do not have to incorporate the chassis. Proceed to step 3.
3. **Start the entire system.**
   For details, see "6.4 Starting the Entire System."
4. **Close the rack door.**

Chapter 11

Maintaining the Fan Units

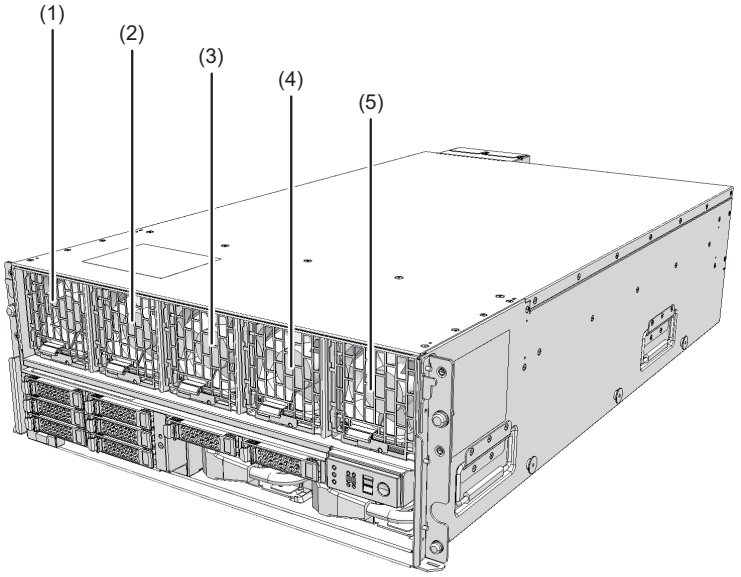
This chapter describes the procedure for maintaining the fan units mounted in the SPARC M10-4/M10-4S.

- Configuration of the Fan Units
- Before Maintaining a Fan Unit
- Enabling the Removal of a Fan Unit
- Removing a Fan Unit
- Installing a Fan Unit
- Restoring the System

11.1 Configuration of the Fan Units

This section describes the configuration and the locations of the fan units.
Five fan units are mounted in each chassis. Each fan unit has two cooling fans that cool the components in the chassis.
If a fault occurs with a cooling fan during system operation, the XSCF detects the error. However, the system can continue operating because the fans have a redundant configuration.

Figure 11-1 Location of fan units



Location number	Component
1	Fan unit (FANU#0)
2	Fan unit (FANU#1)
3	Fan unit (FANU#2)
4	Fan unit (FANU#3)
5	Fan unit (FANU#4)

11.2 Before Maintaining a Fan Unit

This section describes the types and the flow of maintenance of the fan units, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

11.2.1 Types of maintenance

Table 11-1 lists the types of maintenance for the fan units. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 11-1 Types of maintenance for fan unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped
Single-chassis configuration	Supported	Unsupported	Supported	Supported	Supported
Building block configuration	Supported	Supported (*2)	Supported	Supported	Supported

*1: For a single-chassis configuration, the inactive/cold maintenance procedure is the same as that for stopping the system, therefore see the procedure for system-stopped maintenance.
*2: It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition.

11.2.2 Maintenance flow

Table 11-2 shows the maintenance procedure for the fan units.

Table 11-2 Maintenance flow

Details of update process		Replacement
1	Preparation	11.3
2	Removing a fan unit	11.4
3	Installing a fan unit	11.5
4	Restoring the system	11.6

11.2.3 Precautions for replacement

Note the following points when replacing a fan unit:

- When replacing multiple fan units, replace one unit at a time. If redundancy of the fan units cannot be preserved, system-stopped maintenance must be performed.
- The cooling fans have a redundant configuration. Thus, the system can continue operating even if one of the fans in the fan units fails. Avoid operating the system with a faulty fan for an extended period and replace the fan unit containing the failed fan as soon as possible.

11.3 Enabling the Removal of a Fan Unit

This section describes the preparations that must be completed prior to removing a fan unit. The preparation procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

11.3.1 Active/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Execute the replacefru command to release the fan unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

11.3.2 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Release the chassis, in which the fan unit requiring maintenance is mounted, from the physical partition.**
For details, see "5.2 Releasing a Chassis from the Physical Partition."
6. **Execute the replacefru command to release the fan unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

11.3.3 Inactive/Hot maintenance

For a single-chassis configuration

1. **Open the rack door.**

2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Stop the entire system.**
For details, see "5.4 Stopping the Entire System."
6. **Execute the showpparstatus command to confirm that the physical partition requiring maintenance is powered off.**

```
XSCF> showpparstatus -a
```

7. **Execute the replacefru command to release the fan unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

For a building-block configuration

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the fan unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

11.3.4 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

11.3.5 System-stopped maintenance

The procedure in the case of system-stopped maintenance is same for the building block configuration and single-chassis configuration.

1. **Open the rack door.**

2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Stop the entire system.**
For details, see "5.4 Stopping the Entire System."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**
For a single-chassis configuration, you do not have to release the chassis. Proceed to step 7.

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

11.4 Removing a Fan Unit

This section describes the procedure for removing a fan unit. Complete the necessary preparations prior to attempting the removal. For details, see "11.3 Enabling the Removal of a Fan Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

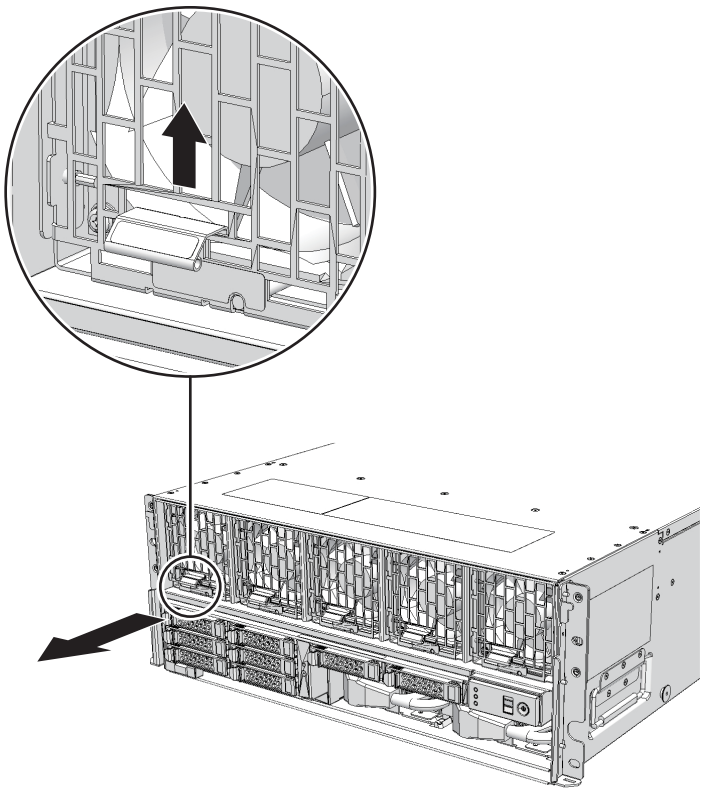
11.4.1 Accessing a fan unit

1. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."

11.4.2 Removing a fan unit

1. **Pull out the fan unit while raising its lever.**

Figure 11-2 Lever of fan unit



2. **Carefully remove the fan unit from its slot.**

Note - Place the removed fan unit on a grounded antistatic ESD mat.

11.5 Installing a Fan Unit

This section describes the procedure for installing a fan unit.

11.5.1 Installing a fan unit

1. **Carefully insert the fan unit into its slot.**

Note - Do not force the fan unit into the slot. Using excessive force may damage the component or the chassis.

---

2. **Push the fan unit fully home.**

Note - Check that the fan unit is fully inserted and secured.

11.5.2 Restoring the chassis

1. **Install the front cover.**
   For details, see "6.5.3 Installing the front cover."

11.6 Restoring the System

This section describes the procedure for restoring the system after installing a fan unit. The restoration procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

11.6.1 Active/Hot maintenance

1. **Return to the operation of the XSCF firmware replacefru command to confirm that the fan unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
2. **Execute the showstatus command to confirm that there is no problem with the fan unit after the completion of maintenance.**

```
XSCF> showstatus
```

3. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

4. **Close the rack door.**

11.6.2 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

---

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Incorporate the chassis, in which the fan unit requiring maintenance is mounted, into the physical partition.**
   For details, see "6.2 Incorporating a Chassis into a Physical Partition."
4. **Close the rack door.**

11.6.3 Inactive/Hot maintenance

For a single-chassis configuration

1. **Log in to the XSCF shell.**
2. **Return to the operation of the XSCF firmware replacefru command to confirm that the fan unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Start the entire system.**
   For details, see "6.4 Starting the Entire System."
4. **Close the rack door.**

For a building-block configuration

1. **Log in to the XSCF shell.**
2. **Return to the operation of the XSCF firmware replacefru command to confirm that the fan unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

11.6.4 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

---

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

11.6.5 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

   For a single-chassis configuration, you do not have to incorporate the chassis. Proceed to step 3.
3. **Start the entire system.**
   For details, see "6.4 Starting the Entire System."
4. **Close the rack door.**

Chapter 12

Maintaining the Internal Disks

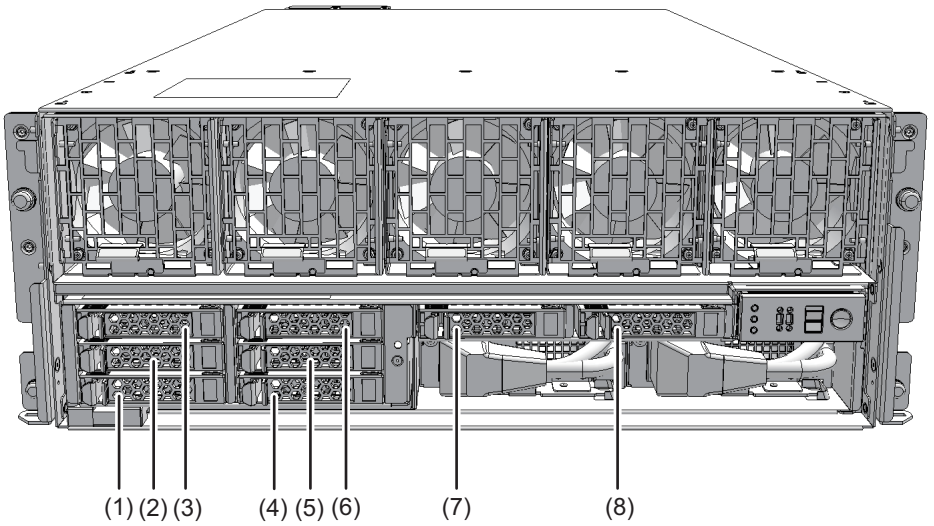
This chapter describes the procedure for maintaining the internal disks mounted in the SPARC M10-4/M10-4S. An internal disk can be replaced, expanded, or reduced.

- Configuration of the Internal Disks
- Before Maintaining an Internal Disk
- Enabling the Removal of an Internal Disk
- Removing an Internal Disk
- Installing an Internal Disk
- Restoring the System

12.1 Configuration of the Internal Disks

This section describes the configuration and locations of the internal disks.
The chassis provides eight slots for mounting internal disks. The system storage can be expanded by installing extra hard disk drives (HDDs) or solid state drives (SSDs) in these slots.

Figure 12-1 Location of internal disks



Location number	Component
1	Internal disk (HDD#0)
2	Internal disk (HDD#1)
3	Internal disk (HDD#2)
4	Internal disk (HDD#3)
5	Internal disk (HDD#4)
6	Internal disk (HDD#5)
7	Internal disk (HDD#6)
8	Internal disk (HDD#7)

12.1.1 Identification of disk slot

To perform active replacement of a disk drive, you need to know the physical device name or logical device name of the drive to be installed or removed. When a disk error is likely to occur or occurs in the system, normally you can check messages regarding a disk that is likely to cause or has caused an error from the system console. This information is recorded also in the /var/adm/messages file.

These error messages normally indicate the internal disk drives in which the errors have occurred by their physical or logical device names. In addition, depending on the application, the slot number of the disk may be reported.

The procedure to display the mounting position information of the HDD varies

depending on OS.

- **For Oracle Solaris 11**
  For details, see "Using the format command (Oracle Solaris 11)" or "Using the diskinfo command (Oracle Solaris 11)."
- **For Oracle Solaris 10**
  For details, see "Using the diskinfo command (Oracle Solaris 10)."

Using the format command (Oracle Solaris 11)

1. **Execute the showhardconf command to confirm the serial number of the CMUL of the chassis for which mounting location information is to be displayed.**

```
XSCF> showhardconf
SPARC M10-4S;
    + Serial:2081238017; Operator_Panel_Switch:Service;
    + System_Power:Off; System_Phase:Cabinet Power Off;
    Partition#0 PPAR_Status:Powered Off;
    Partition#1 PPAR_Status:Powered Off;
    BB#00 Status:Normal; Role:Master; Ver:2044h; Serial:2081238017;
        + FRU-Part-Number:CA07361-D202 A1                          ;
        + Power_Supply_System: ;
        + Memory_Size:256 GB;
        CMUL Status:Normal; Ver:0101h; Serial:PP123001Y1  ;
                                              * BB#00 CMUL serial
            + FRU-Part-Number:CA07361-D941 C3   /7060911              ;
            + Memory_Size:128 GB;
            CPU#0 Status:Normal; Ver:4142h; Serial:00321144;
                + Freq:3.000 GHz; Type:0x10;
                + Core:16; Strand:2;
            CPU#1 Status:Normal; Ver:4142h; Serial:00322957;
                + Freq:3.000 GHz; Type:0x10;
                + Core:16; Strand:2;
------------------------Ommitted------------------------
    BB#01 Status:Normal; Role:Standby; Ver:2044h; Serial:2081230011;
        + FRU-Part-Number:CA07361-D202 A1                          ;
        + Power_Supply_System: ;
        + Memory_Size:256 GB;
        CMUL Status:Normal; Ver:0101h; Serial:PP123203N0  ;
                                              * BB#01 CMUL serial
            + FRU-Part-Number:CA07361-D941 C3   /7060911              ;
            + Memory_Size:128 GB;
            CPU#0 Status:Normal; Ver:4142h; Serial:00320804;
                + Freq:3.000 GHz; Type:0x10;
                + Core:16; Strand:2;
            CPU#1 Status:Normal; Ver:4142h; Serial:00321030;
                + Freq:3.000 GHz; Type:0x10;
                + Core:16; Strand:2;
            MEM#00A Status:Normal;
                + Code:2c800118KSF1G72PZ-1G6E1 4531-1A94229F;
                + Type:04; Size:8 GB;
------------------------Ommitted------------------------
```

2. **Execute the format command to confirm the physical disk slot.**

In the following example, (1) to (5) indicate the following:

(1): The logical path name of the disk.

(2): The disk is mounted in the HDD00 slot of BB#01.

(3): The disk is mounted in the HDD01 slot of BB#01.

(4): The disk is mounted in the HDD00 slot of BB#00.

(5): The disk is mounted in the HDD01 slot of BB#00.

```
# format
Searching for disks...done

AVAILABLE DISK SELECTIONS:
    0. c2t50000394281B5312d0 <TOSHIBA-MBF2600RC-3706 cyl 64986 alt 2 hd 27 sec
 668> <-- (1)
       /pci@8800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@w50000394281b5312,0
       /dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD00/disk <-- (2)
                                                    (*1)
    1. c2t50000394281B59D6d0 <TOSHIBA-MBF2600RC-3706 cyl 64986 alt 2 hd 27 sec
 668> <-- (1)
       /pci@8800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@w50000394281b59d6,0
       /dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD01/disk <-- (3)
    2. c0t500003942823C8C6d0 <TOSHIBA-MBF2600RC-3706 cyl 64986 alt 2 hd 27 sec
 668> <-- (1)
       /pci@8000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@w500003942823c8c6,0
       /dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD00/disk <-- (4)
                                                    (*2)
    3. c0t50000394281B517Ad0 <TOSHIBA-MBF2600RC-3706 cyl 64986 alt 2 hd 27 sec
 668> <-- (1)
       /pci@8000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@w50000394281b517a,0
       /dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD01/disk <-- (5)
Specify disk (enter its number):
```

*1: The last four digits of the BB#1_CMUL serial number

*2: The last four digits of the BB#0_CMUL serial number

Using the diskinfo command (Oracle Solaris 11)

1. **Execute the showhardconf command to confirm the CMUL serial number of the chassis that indicates the mounting position information.**

```
XSCF> showhardconf
SPARC M10-4S;
    + Serial:2081238017; Operator_Panel_Switch:Service;
    + System_Power:Off; System_Phase:Cabinet Power Off;
    Partition#0 PPAR_Status:Powered Off;
    Partition#1 PPAR_Status:Powered Off;
    BB#00 Status:Normal; Role:Master; Ver:2044h; Serial:2081238017;
        + FRU-Part-Number:CA07361-D202 A1                          ;
        + Power_Supply_System: ;
        + Memory_Size:256 GB;
        CMUL Status:Normal; Ver:0101h; Serial:PP123001Y1  ;
```

```
                                              * BB#00 CMUL serial
            + FRU-Part-Number:CA07361-D941 C3   /7060911              ;
            + Memory_Size:128 GB;
            CPU#0 Status:Normal; Ver:4142h; Serial:00321144;
                + Freq:3.000 GHz; Type:0x10;
                + Core:16; Strand:2;
            CPU#1 Status:Normal; Ver:4142h; Serial:00322957;
                + Freq:3.000 GHz; Type:0x10;
                + Core:16; Strand:2;
------------------------Ommitted------------------------
    BB#01 Status:Normal; Role:Standby; Ver:2044h; Serial:2081230011;
        + FRU-Part-Number:CA07361-D202 A1                       ;
        + Power_Supply_System: ;
        + Memory_Size:256 GB;
        CMUL Status:Normal; Ver:0101h; Serial:PP123203N0  ;
                                              * BB#01 CMUL serial
            + FRU-Part-Number:CA07361-D941 C3   /7060911              ;
            + Memory_Size:128 GB;
            CPU#0 Status:Normal; Ver:4142h; Serial:00320804;
                + Freq:3.000 GHz; Type:0x10;
                + Core:16; Strand:2;
            CPU#1 Status:Normal; Ver:4142h; Serial:00321030;
                + Freq:3.000 GHz; Type:0x10;
                + Core:16; Strand:2;
            MEM#00A Status:Normal;
                + Code:2c800118KSF1G72PZ-1G6E1 4531-1A94229F;
                + Type:04; Size:8 GB;
------------------------Ommitted------------------------
```

2. **Execute the diskinfo(1M) command to check the physical disk slot.**
   (1) to (4) in the example below specify the following:

   (1): The device path name and logical path name of the disk mounted on the HDD0 of BB#01.

   (2): The device path name and logical path name of the disk mounted on the HDD1 of BB#01.

   (3): The device path name and logical path name of the disk mounted on the HDD0 of BB#00.

   (4): The device path name and logical path name of the disk mounted on the HDD1 of BB#00.

```
# diskinfo
D:devchassis-path                                           c:occupant-compdev
----------------------------------------------------------- ------------------
/dev/chassis/SYS/BB0/CMUL/HDD0                              -
/dev/chassis/SYS/BB0/CMUL/HDD1                              -
/dev/chassis/SYS/BB0/CMUL/HDD2                              -
/dev/chassis/SYS/BB0/CMUL/HDD3                              -
/dev/chassis/SYS/BB0/CMUL/HDD4                              -
/dev/chassis/SYS/BB0/CMUL/HDD5                              -
/dev/chassis/SYS/BB0/CMUL/HDD6                              -
/dev/chassis/SYS/BB0/CMUL/HDD7                              -
```

```
/dev/chassis/SYS/BB1/CMUL/HDD0                                  -
/dev/chassis/SYS/BB1/CMUL/HDD1                                  -
/dev/chassis/SYS/BB1/CMUL/HDD2                                  -
/dev/chassis/SYS/BB1/CMUL/HDD3                                  -
/dev/chassis/SYS/BB1/CMUL/HDD4                                  -
/dev/chassis/SYS/BB1/CMUL/HDD5                                  -
/dev/chassis/SYS/BB1/CMUL/HDD6                                  -
/dev/chassis/SYS/BB1/CMUL/HDD7                                  -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD00/disk
c4t50000394281B5312d0 <-- (1)                (*1)
/dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD01/disk
c4t50000394281B59D6d0 <-- (2)
/dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD02      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD03      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD04      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD05      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD06      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d31bf/03N0_HDD07      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD00/disk
c2t500003942823C8C6d0 <-- (3)                (*2)
/dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD01/disk
c2t50000394281B517Ad0 <-- (4)
/dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD02      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD03      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD04      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD05      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD06      -
/dev/chassis/FUJITSU-BBEXP.500000e0e06d237f/01Y1_HDD07      -
```

*1: The last four digits of the BB#01_CMUL serial number

*2: The last four digits of the BB#00_CMUL serial number

Using the diskinfo command (Oracle Solaris 10)

1. **Execute the diskinfo command to check the physical disk slot and physical system board.**
   (1) to (4) in the example below specify the following:
   (1): The logical path name of the disk mounted on the HDD0.
   (2): The device path of the disk mounted on the HDD0 of LSB#0.
   (3): The logical path name of the disk mounted on the HDD1.
   (4): The device path of the disk mounted on the HDD1 of LSB#0.

```
# diskinfo -ap

Enclosure path:         2081210007-physical-hba-0
Chassis Serial Number:  2081210007-physical-hba-0
Chassis Model:          ORCL,SPARC64-X

Enclosure path:         /dev/es/ses0
Chassis Serial Number:  500000e0e06d233f
Chassis Model:          FUJITSU-BBEXP
```

```
Label    Disk name                Vendor   Product         Vers
-------- -----------------------  -------- --------------- ----
HDD_0    c0t50000393D8289180d0    TOSHIBA  MBF2600RC       3706 <-- (1)
  Physical path
  ---------------------------------
  0: /pci@8000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@w50000393D8289180,0<--(2)
      * LSB#0
HDD_1    c0t50000393D82891D0d0    TOSHIBA  MBF2600RC       3706 <-- (3)
  Physical path
  ---------------------------------
  0: /pci@8000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@w50000393D82891D0,0<--(4)
      * LSB#0
```

Device paths differ depending on the system configuration.

Table 12-1 lists examples of the device paths of logical system boards in SPARC M10 systems.

This table can be used for mapping of the device paths of internal disk drives and the logical system board numbers. The letters "WWN" in the table represents the WWN assigned to the disk.

Table 12-1 Disk slot number

LSB number	Device path
LSB#0	/pci@8000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#1	/pci@8800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#2	/pci@9000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#3	/pci@9800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#4	/pci@a000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#5	/pci@a800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#6	/pci@b000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#7	/pci@b800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#8	/pci@c000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#9	/pci@c800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#10	/pci@d000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#11	/pci@d800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#12	/pci@e000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#13	/pci@e800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#14	/pci@f000/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0
LSB#15	/pci@f800/pci@4/pci@0/pci@0/scsi@0/iport@f/disk@wWWN,0

2. **Execute the showboards command to confirm the BB-ID of the chassis in which the disk requiring maintenance is mounted.**
   Identify the BB-ID from the LSB number confirmed in step 1. The BB-ID of the

chassis requiring maintenance is indicated by the system board (PSB) number.

```
XSCF> showboards -a
PSB    PPAR-ID(LSB)  Assignment    Pwr   Conn  Conf  Test      Fault
----   ------------  ----------    ----  ----  ----  -------   --------
00-0   00(00)        Assigned      y     y     y     Passed    Normal
* BB#0    * LSB#0
01-0   00(01)        Assigned      y     y     y     Passed    Normal
```

12.2 Before Maintaining an Internal Disk

This section describes the types and the flow of maintenance of the internal disks, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

12.2.1 Types of maintenance

Table 12-2 lists the types of maintenance for the internal disks. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 12-2 Types of maintenance for internal disk

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped
Single-chassis configuration	Supported (*2)	Unsupported	Supported	Supported	Supported
Building block configuration	Supported (*2)	Supported (*3)	Supported	Supported	Supported

*1: For a single-chassis configuration, the inactive/cold maintenance procedure is the same as that for stopping the system, therefore see the procedure for system-stopped maintenance.
*2: Supported only for internal disks of devices other than boot devices. If, however, the boot device has a redundant configuration (RAID configuration), active/hot maintenance can be performed.
*3: It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition.

12.2.2 Maintenance flow

Table 12-3 lists the sequence of the maintenance procedure for the internal disks. The procedure for expanding an internal disk is the same as that for installing an internal disk. The procedure for reducing an internal disk is the same as that for removing an internal disk.

Table 12-3 Maintenance flow

Details of update process		Replacement	Expansion	Reduction
1	Preparation	12.3	12.3	12.3
2	Removing an internal disk	12.4	-	12.4
3	Installing an internal disk	12.5	12.5	-
4	Restoring the system	12.6	12.6	12.6

12.2.3 Precautions for installation

Note the following points when expanding internal disks:

- To expand an internal disk, remove the hard disk drive filler unit from the slot in which you will install the internal disk.
- Store the removed internal disk filler unit safely, such that it can be used again if you subsequently reduce the internal disk.

12.2.4 Precautions for removal

Note the following points when removing internal disks:

- When you reduce the internal disk, install the hard disk drive filler unit in the slot from which you have removed the internal disk.

12.3 Enabling the Removal of an Internal Disk

This section describes the preparations that must be completed prior to removing an internal disk. The preparation procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

12.3.1 Active/Hot maintenance

Note - Unless the system has a redundant configuration, data on the hard disk drive will be lost. Thus, perform this operation only after backing up the data on the hard disk drive. In addition, active/hot maintenance of the boot device cannot be performed in a non-redundant configuration.

Before performing maintenance, check the hardware configuration and software configuration. For details, see "4.2 Confirming the System Configuration."
The procedure may vary depending on the configuration of the hard disk drive.

When the system is configured with a hardware RAID

Proceed only after checking the failed hard disk drive. For details, see "14.2.8 Checking the disk drive status" and "14.2.9 Checking for a failed disk drive" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

When the system is configured with a software RAID

See your software manual.

When the system is configured without either a hardware RAID or software RAID

To add an internal disk, perform the procedure up to step 2.

1. **Open the rack door.**
2. **Display the Oracle Solaris super-user prompt.**
3. **Execute the cfgadm(1M) command to check the configuration of the internal disk.**
   If you replace or reduce an internal disk, use the cfgadm -a command to check the Ap_ID of the disk requiring maintenance and make a note of it. The Ap_ID refers to a string such as "c4::dsk/c4t5000039428298FFEd0".

   If you install an internal disk, use the cfgadm -a command to check the number of disks mounted.

```
# cfgadm -a
```

4. **Stop all applications from using the internal disk.**
5. **Execute the cfgadm(1M) command to release the internal disk requiring maintenance from the system.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c unconfigure Ap_ID
```

6. **Execute the cfgadm(1M) command to blink the CHECK LED of the internal disk requiring maintenance, and determine its location.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -x led=fault,mode=blink Ap_ID
```

7. **Execute the cfgadm(1M) command to confirm that the internal disk requiring maintenance is disconnected.**
   The disconnected internal disk is displayed as "unconfigured."

```
# cfgadm -a
```

12.3.2 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Release the chassis, in which the internal disk requiring maintenance is mounted, from the physical partition.**
   For details, see "5.2 Releasing a Chassis from the Physical Partition."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

   For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

12.3.3 Inactive/Hot maintenance

For a single-chassis configuration

1. **Open the rack door.**
2. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
3. **Stop the entire system.**
   For details, see "5.4 Stopping the Entire System."

For a building-block configuration

1. **Open the rack door.**
2. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
3. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."

12.3.4 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

---

1. **Open the rack door.**
2. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
3. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
4. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

12.3.5 System-stopped maintenance

1. **Open the rack door.**
2. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
3. **Stop the entire system.**
   For details, see "5.4 Stopping the Entire System."
4. **Execute the replacefru command to release the chassis requiring maintenance from the system.**
   For a single-chassis configuration, you do not have to release the chassis. Proceed to step 5.

```
XSCF> replacefru
```

   For details, see "5.1 Releasing an FRU from the System with the replacefru Command."
5. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

12.4 Removing an Internal Disk

This section describes the procedure for removing an internal disk. Perform reduction using the same procedure.
Make the internal disk ready for removal before attempting to remove it. For details, see "12.3 Enabling the Removal of an Internal Disk."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

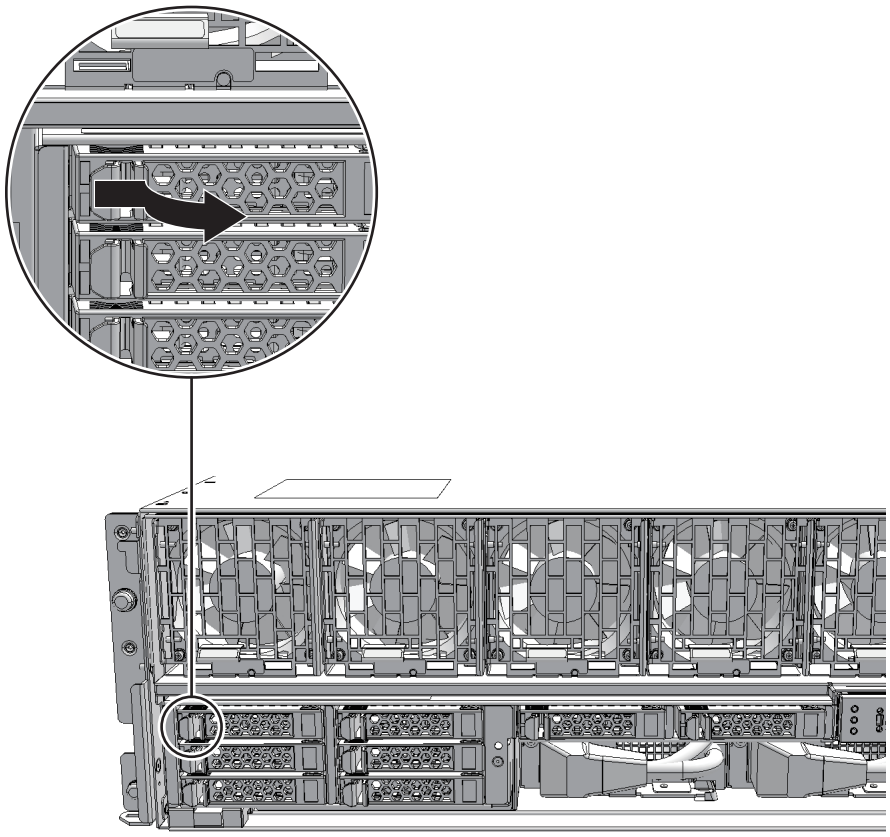
12.4.1 Accessing an internal disk

1. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."

12.4.2 Removing an internal disk

1. **Push the knob on the internal disk to unlock it and then raise the lever to a 45-degree angle.**

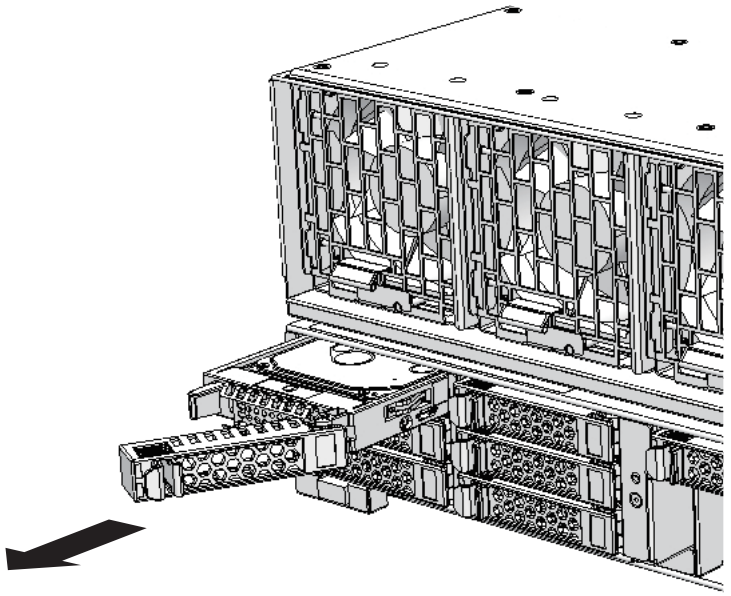
Figure 12-2 Knob on internal disk



2. **Hold the lever and pull out the internal disk by about 3 cm (1.2 in.)**

Note - When performing active/hot maintenance, at this point wait until the motor stops rotating (about 1 minute).

Figure 12-3 Removing an internal disk



3. **Carefully remove the internal disk from its slot.**

Note - Place the removed internal disk on the grounded antistatic ESD mat.

---

4. **When reducing an internal disk, install the the internal disk filler unit in the slot from which the disk was removed.**

12.5 Installing an Internal Disk

This section describes the procedure for installing an internal disk. Perform expansion using the same procedure.

12.5.1 Installing an internal disk

1. **When expanding an internal disk, remove the internal disk filler unit from the slot in which the disk is to be installed.**

2. **With the lever opened, hold the internal disk.**
3. **Carefully insert the internal disk into the slot.**

Note - Do not force the internal disk into the slot. Using excessive force may damage the component or the chassis.

---

4. **Close the lever to secure the internal disk.**

Note - Ensure that the internal disks are firmly inserted and secured.

12.5.2 Restoring the chassis

1. **Install the front cover.**
   For details, see "6.5.3 Installing the front cover."

12.6 Restoring the System

This section describes the procedures for restoring the system after replacement, addition, and removal of internal disks. The restoration procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

12.6.1 Active/Hot maintenance

The procedure may vary depending on the configuration of the hard disk drive.

When the system is configured with a hardware RAID

The operation varies depending on the hardware RAID configuration (RAID 0, RAID 1, or RAID 1E). For details, see "14.2.9 Checking for a failed disk drive" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.

When the system is configured with a software RAID

See your software manual.

When the system is configured without either a hardware RAID or software RAID

To replace or remove an internal disk, perform the procedure from step 2.

1. **Return to the operation of the cfgadm(1M) command of Oracle Solaris super-user prompt and confirm that the number of internal disks has increased.**
   If you installed an internal disk, make note of the Ap_ID of the added disk. The Ap_ID refers to a string such as "c4::dsk/c4t5000039428298FFEd0".

   If you replaced or reduced an internal disk, you do not have to perform this step.

```
# cfgadm -a
```

2. **Execute the cfgadm(1M) command to incorporate the internal disk requiring maintenance into Oracle Solaris.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c configure Ap_ID
```

3. **Execute the cfgadm(1M) command to confirm that the internal disk requiring maintenance has been incorporated.**
   The incorporated internal disk is displayed as "configured."

```
# cfgadm -a
```

4. **Close the rack door.**

12.6.2 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

---

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the testsb command to confirm that the internal disk requiring maintenance is normally recognized.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board 00-0.

```
XSCF> testsb -y -p 00-0
```

   During the diagnosis processing, the probe-scsi-all command of the OpenBoot PROM is executed, and the result is displayed.

4. **Incorporate the chassis, in which the internal disk requiring maintenance is mounted, into the physical partition.**
   For details, see "6.2 Incorporating a Chassis into a Physical Partition."

5. **Close the rack door.**

12.6.3 Inactive/Hot maintenance

For a single-chassis configuration

1. **Start the entire system.**
   For details, see "6.4 Starting the Entire System."

2. **Close the rack door.**

For a building-block configuration

1. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."

2. **Close the rack door.**

12.6.4 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**

For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the testsb command to confirm that the internal disk requiring maintenance is normally recognized.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board 00-0.

```
XSCF> testsb -y -p 00-0
```

   During the diagnosis processing, the probe-scsi-all command of the OpenBoot PROM is executed, and the result is displayed.
4. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
5. **Close the rack door.**

12.6.5 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

   For a single-chassis configuration, you do not have to incorporate the chassis. Proceed to step 3.
3. **Execute the testsb command to confirm that the internal disk requiring maintenance is normally recognized.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board 00-0.

```
XSCF> testsb -y -p 00-0
```

During the diagnosis processing, the probe-scsi-all command of the OpenBoot PROM is executed, and the result is displayed.

4. **Start the entire system.**
   For details, see "6.4 Starting the Entire System."

5. **Close the rack door.**

Chapter 13

Maintaining the PCI Express Cards

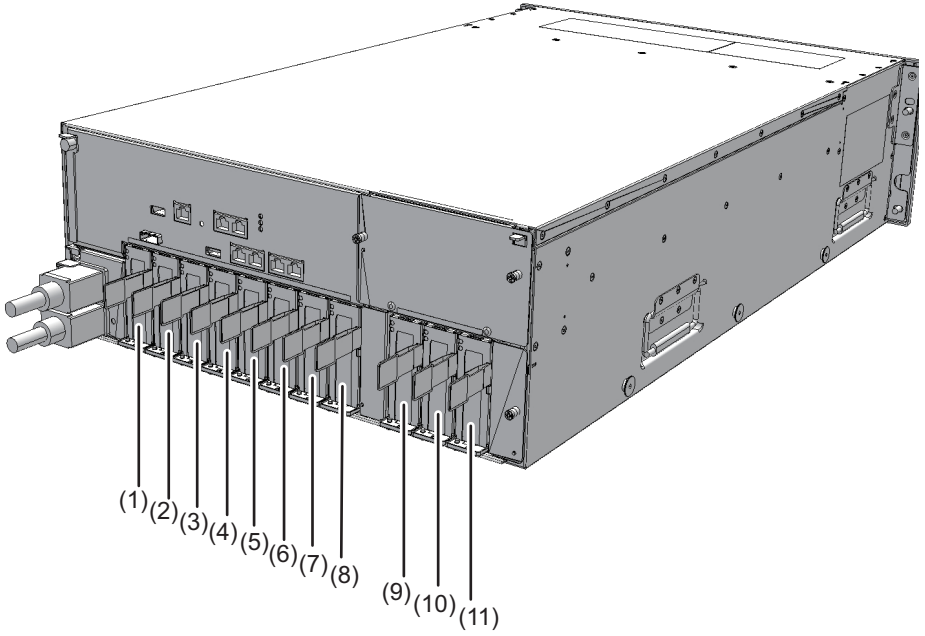
This chapter describes the procedure for maintaining a PCI Express (PCIe) card mounted in a SPARC M10-4/M10-4S. A PCIe card can be replaced, expanded, and reduced.

- Configuration of the PCI Express Cards
- Before Maintaining a PCI Express Card
- Checking If PCI Hot Plug (PHP) Can Be Used
- Enabling the Removal of a PCI Express Card
- Removing a PCI Express Card
- Installing a PCI Express Card
- Restoring the System

13.1 Configuration of the PCI Express Cards

This section describes the configuration and locations of the PCIe cards.
Up to eight PCIe cards can be mounted in a SPARC M10-4S with a crossbar unit. Up to 11 PCIe cards can be mounted in a SPARC M10-4 without a crossbar unit.

Figure 13-1 Location of the PCIe card



Location number	Component
1	PCIe card (PCI#0)
2	PCIe card (PCI#1)
3	PCIe card (PCI#2)
4	PCIe card (PCI#3)
5	PCIe card (PCI#4)
6	PCIe card (PCI#5)
7	PCIe card (PCI#6)
8	PCIe card (PCI#7)
9	PCIe card (PCI#8) (*)
10	PCIe card (PCI#9) (*)
11	PCIe card (PCI#10) (*)

*: Can be mounted only on a SPARC M10-4.

13.2 Before Maintaining a PCI Express Card

This section describes the types and the flow of the maintenance of the PCIe cards, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

13.2.1 Types of maintenance

Table 13-1 lists the types of maintenance for the PCIe cards. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

The PCIe cards can be removed/installed while the input power to the chassis is on (power cord is connected).
This section explains how to perform all types of maintenance work while the power cord of the chassis remains connected.

Table 13-1 Types of maintenance for PCIe cards

Configuration	Active/hot (with PHP)	Active/hot (with DR)	Inactive/hot	System stopped
Single-chassis configuration	Supported (*1)	Unsupported	Unsupported (*3)	Supported
Building block configuration	Supported (*1)	Supported (*2)	Supported	Supported

*1: Perform maintenance work using PCI hot plug (PHP). See "13.3 Checking If PCI Hot Plug (PHP) Can Be Used" to check whether PHP can be used.
If SE0X7SA2F (an SAS card) is used, PCIe card release using PHP may fail. If the release fails, perform inactive replacement.
*2: It is necessary to use dynamic reconfiguration (DR) for the physical partition to disconnect a chassis requiring maintenance from the physical partition.
*3: For a single-chassis configuration, system-stopped maintenance should be performed.

13.2.2 Maintenance flow

Table 13-2 lists the sequence of the maintenance procedure for PCIe cards. The procedure for expanding a PCIe card is the same as that for installing a PCIe card. The procedure for reducing a PCIe card is the same as that for removing a PCIe card.

Table 13-2 Maintenance flow

Details of update process		Replacement	Expansion	Reduction
1	Pre-check	13.3	13.3	13.3
2	Preparation	13.4	13.4	13.4
3	Removing a PCIe card or the filler for a PCIe card	13.5	13.5	13.5
4	Installing a PCIe card or the filler for a PCIe card	13.6	13.6	13.6
5	Restoring the system	13.7	13.7	13.7

13.2.3 Precautions for replacement

Note the following points when replacing PCIe cards.

- For active maintenance by PHP, a multipath setting is necessary depending on the use of the PCIe cards.

13.2.4 Precautions for installation

Note the following points when performing PCIe card expansion.

- Set a multipath depending on the use of the PCIe card when performing active/hot maintenance or active/cold maintenance with PHP.
- If you are performing PCIe card expansion, remove the filler for the PCIe card from the PCIe card cassette.
- Keep the removed filler because it will be needed if PCIe card reduction is subsequently done.

13.2.5 Precautions for removal

Note the following points when removing PCIe cards.

- Set a multipath depending on the use of the PCIe card when performing active/hot maintenance or active/cold maintenance with PHP.
- If you are removing a PCIe card, attach the filler for the PCIe card after removing the PCIe card from the PCIe card cassette.

13.3 Checking If PCI Hot Plug (PHP) Can Be Used

PHP enables you to perform maintenance for the PCIe cards while Oracle Solaris is operating. This section checks whether the PCIe card requiring maintenance can use PHP.

1. **Log in to the XSCF shell.**
2. **Execute the showlogs command to identify the PCIe card requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

3. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
4. **Check whether the PCIe card requiring maintenance supports PHP.**
   The following PCIe cards do not support PHP:

   [FCoE] SP1X7FAR2F, SP1X7FAS2F, SP1X7FBR2F, and SP1X7FBS2F

   [IB] SE1X7BA12F and 7104073 (7104074)

   If the PCIe card requiring maintenance does not support PHP or if you do not use PHP, you do not have to perform step 5 and the subsequent step.
5. **If the PCIe card requiring maintenance supports PHP, execute the ldm list-io -l command to confirm the logical domain to which the PCIe card is assigned and the logical domain to which the PCIe root complex the PCIe card belongs to is assigned.**

```
# ldm list-io -l
NAME                                      TYPE   BUS      DOMAIN   STATUS
----                                      ----   ---      ------   ------
PCIE0                                     BUS    PCIE0    primary
[pci@8000]
PCIE1                                     BUS    PCIE1    primary       <--(*1)
[pci@8100]
PCIE2                                     BUS    PCIE2    primary  IOV  <--(*2)
[pci@8200]
PCIE3                                     BUS    PCIE3    rootdom       <--(*3)
[pci@8300]
PCIE4                                     BUS    PCIE4    primary
[pci@8400]
PCIE5                                     BUS    PCIE5    primary  IOV
[pci@8500]
PCIE6                                     BUS    PCIE6    rootdom  IOV  <--(*4)
[pci@8600]
PCIE7                                     BUS    PCIE7    primary  IOV
```

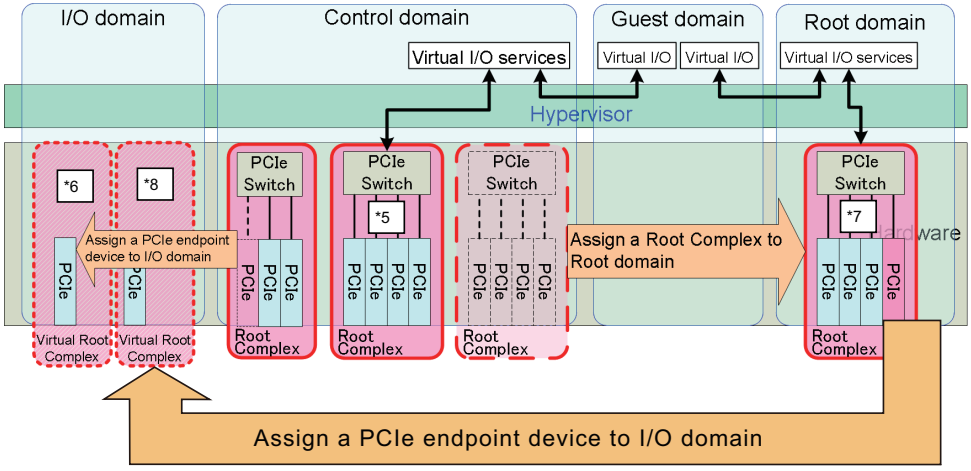
```
[pci@8700]
/BB0/CMUL/NET0                                PCIE   PCIE0    primary  OCC
[pci@8000/pci@4/pci@0/pci@9]
network@0
network@0,1
/BB0/CMUL/SASHBA                              PCIE   PCIE0    primary  OCC
[pci@8000/pci@4/pci@0/pci@0]
scsi@0/iport@f/disk@w50000393a82368b2,0
scsi@0/iport@f/smp@w500000e0e06d03bf
scsi@0/iport@f/enclosure@w500000e0e06d03bd,0
scsi@0/iport@v0
/BB0/PCI0                                     PCIE   PCIE1    primary  OCC  <--(*5)
[pci@8100/pci@4/pci@0/pci@0]
/BB0/PCI3                                     PCIE   PCIE2    primary  EMP
[pci@8200/pci@4/pci@0/pci@0]
/BB0/PCI4                                     PCIE   PCIE2    iodom1   OCC  <--(*6)
[pci@8200/pci@4/pci@0/pci@8]
/BB0/PCI7                                     PCIE   PCIE3    rootdom  EMP
[pci@8300/pci@4/pci@0/pci@0]
/BB0/PCI8                                     PCIE   PCIE3    rootdom  EMP  <--(*7)
[pci@8300/pci@4/pci@0/pci@8]
/BB0/CMUL/NET2                                PCIE   PCIE4    primary  OCC
[pci@8400/pci@4/pci@0/pci@a]
network@0
network@0,1
/BB0/PCI1                                     PCIE   PCIE5    rootdom  EMP
[pci@8500/pci@4/pci@0/pci@8]
/BB0/PCI2                                     PCIE   PCIE5    rootdom  OCC
[pci@8500/pci@4/pci@0/pci@9]
/BB0/PCI5                                     PCIE   PCIE6    iodom2   OCC  <--(*8)
[pci@8600/pci@4/pci@0/pci@9]
/BB0/PCI6                                     PCIE   PCIE6    rootdom  OCC
[pci@8600/pci@4/pci@0/pci@11]
/BB0/PCI9                                     PCIE   PCIE7    primary  OCC
[pci@8700/pci@4/pci@0/pci@9]
/BB0/PCI10                                    PCIE   PCIE7    primary  OCC
[pci@8700/pci@4/pci@0/pci@11]
```

- **Logical domain to which the PCIe card is assigned**
  The name shown under [DOMAIN] (of the row containing "/BBx/PCIx" under [NAME]) for the slot of the PCIe card requiring maintenance represents the logical domain to which the PCIe card is assigned. (*5 to *8 in the execution example)
  *5: /BB0/PCI0 is assigned to primary, and PCIE1 is also assigned to primary.
  *6: /BB0/PCI4 is assigned to iodom1, and PCIE2 is assigned to primary.
  *7: /BB0/PCI8 is assigned to rootdom, and PCIE3 is also assigned to rootdom.
  *8: /BB0/PCI5 is assigned to iodom2, and PCIE6 is assigned to rootdom.
- **Logical domain to which the PCIe root complex the PCIe card belongs to is assigned**
  The name "PCIEx" shown under [BUS] of the row described above is the name of the PCIe root complex the PCIe card belongs to. The name shown under [DOMAIN] (of the row containing "PCIEx" under [NAME]) for the same PCIe root complex represents the logical domain to which the PCIe root complex the

PCIe card belongs to is assigned. (*1 to *4 in the execution example)
*1: PCIE1 is assigned to primary.
*2: PCIE2 is assigned to primary.
*3: PCIE3 is assigned to rootdom.
*4: PCIE6 is assigned to rootdom.

6. **Determine whether PHP can be used, combining the two pieces of information described above based on the confirmation results obtained in step 5.**
   - Suppose that both of the logical domains to which the PCIe slot and the PCIe root complex are assigned are found to be a control domain (primary). In this case, active/hot maintenance can be performed using PHP from the control domain. (*5 in Figure 13-2)
   - Suppose that both of the logical domains to which the PCIe slot and the PCIe root complex are assigned are found not to be a control domain but the same logical domain (root domain). In this case, active/hot maintenance can be performed using PHP from the root domain. (*7 in Figure 13-2)
   - In cases other than the above (those where the domains are found to be I/O domains), PHP cannot be used. Thus, see Table 13-4 for an appropriate maintenance procedure. (*6 and *8 in Figure 13-2)

Figure 13-2 Confirming assignment to logical domains



*5 to *8 in the figure correspond to the above ldm list-io -l command execution example.

Table 13-3 Whether PHP can be used

Root Complex	PCIe slot	Can PHP be used?	Remarks	Reference
Control domain	Control domain	Yes	See *5 in the example of executing the ldm list-io -l command and *5 in Figure 13-2.	"13.4.1 Active/Hot maintenance (with PHP)"

Table 13-3 Whether PHP can be used *(continued)*

Root Complex	PCIe slot	Can PHP be used?	Remarks	Reference
Control domain	I/O domain	No	See *6 in the example of executing the ldm list-io -l command and *6 in Figure 13-2.	"Table 13-4 Operations when PHP cannot be used or you do not use PHP"
Root domain	Root domain	Yes	See *7 in the example of executing the ldm list-io -l command and *7 in Figure 13-2.	"13.4.1 Active/Hot maintenance (with PHP)"
Root domain	I/O domain	No	See *8 in the example of executing the ldm list-io -l command and *8 in Figure 13-2.	"Table 13-4 Operations when PHP cannot be used or you do not use PHP"

Table 13-4 Operations when PHP cannot be used or you do not use PHP

System configuration	Operation	Reference
Building block	Use building block configuration DR to release the target chassis from the physical partition (*1).	"13.4.2 Active/Hot maintenance (with DR)"
Single-chassis configuration	Stop the system, and then perform maintenance.	"13.4.4 System-stopped maintenance"

*1: If you do not use DR, the same procedure as for a single-chassis configuration should be performed.

13.4 Enabling the Removal of a PCI Express Card

This section describes the preparations that must be completed prior to the removal of a PCIe card. The preparation procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance (with PHP)
- Active/Hot maintenance (with DR)
- Inactive/Hot maintenance
- System-stopped maintenance

13.4.1 Active/Hot maintenance (with PHP)

1. **Open the rack door.**

2. **Connect to the control domain console of the physical partition.**
3. **Check whether there is any guest domain that is virtually using the PCIe card requiring maintenance.**
   - For Ethernet card
   a. **Execute the ldm list-bindings <*domain name*> command from the control domain to check virtual network switch [VSW] information for the physical network interface name ([NET-DEV] value) that is assigned to a virtual network switch.**
   In the following example, "rootdom", the logical domain name to which the PCIe card is assigned, is specified.

```
# ldm list-bindings rootdom
------------------------Ommitted-------------------------
VSW
    NAME         MAC               NET-DEV   ID   DEVICE     LINKPROP
DEFAULT-VLAN-ID PVID ......
    vsw0         xx:xx:xx:xx:xx:xx net4(*1)   0    switch@0             1
        1
        PEER                       MAC                PVID VID
 MTU   MAXBW .....
        vnet0@guest1(*2)          xx:xx:xx:xx:xx:xx 1
1500

------------------------Ommitted-------------------------
```

*1: Physical network interface

*2: Virtual network device and guest domain serviced by vsw0

b. **Log in to the logical domain to which the PCIe card is assigned. Then, determine the physical location of the physical network interface above, and check whether it corresponds to the PCIe card requiring maintenance.**

- For Oracle Solaris 11, execute the dladm show-phys -L command to determine [LOC] (physical location) of the physical network interface corresponding to [NET-DEV] in step a.

```
# dladm show-phys -L
LINK              DEVICE       LOC
net0              igb0         /BB0/CMUL
net1              igb1         /BB0/CMUL
net2              igb2         /BB0/CMUU
net3              igb3         /BB0/CMUU
net4              ixgbe0       BB#0-PCI#0  <--*
net5              ixgbe1       BB#0-PCI#0
```

- For Oracle Solaris 10, execute the /etc/path_to_inst command to confirm the physical device path, and compare it with the physical device path displayed by the ldm list-io -l command to determine the physical location.

```
# grep " 0 \"ixgbe"\" /etc/path_to_inst
"/pci@8100/pci@4/pci@0/pci@0/network@0" 0 "ixgbe"
```

c. **If the virtual network switch to which the PCIe card requiring maintenance is assigned is found in steps a and b, see the [PEER] part of the virtual network switch displayed in step a. Confirm the part for the virtual network device and guest domain that use the services of the virtual network switch.**
The display format is "<*virtual network device*>@<*guest domain*>."

- For SAS card or FibreChannel card

a. **Execute the ldm list-bindings command from the control domain to check virtual disk service [VDS] information for the virtual disk backend ([DEVICE] value) that is assigned to the virtual disk service.**
For information on the types that can be assigned to a virtual disk backend, see "Virtual Disk Backend" in the *Oracle VM Server for SPARC Administration Guide*.
In the following example, "rootdom", the logical domain name to which the PCIe card is assigned, is specified.

```
# ldm list-bindings rootdom
-----------------------Ommitted-----------------------
VDS
   NAME           VOLUME         OPTIONS          MPGROUP         DEVICE
   vds0           vol0                                            /export/
vdisks/vdisk.img (*1)
                  vol1                                            /dev/zvol/
dsk/rpool/zvdisk1
                  vol2                                            /dev/dsk/
cxtxxxxxxxxxxxxxxdxsx
    CLIENT                       VOLUME
    vdisk1@guest1                vol0   (*2)
    vdisk2@guest2                vol1
    vdisk3@guest3                vol2
-----------------------Ommitted-----------------------
```

*1: Virtual disk backend

*2: Virtual disk name and guest domain name to which the backend of vol0 is assigned

b. **Log in to the logical domain to which the PCIe card is assigned to identify the physical disk from the backend. Then, identify the PCIe card in use from the physical disk.**
For details of the procedure, see documents for the software that manages respective file system and volume.

For example, suppose that the backend is a file on the ZFS file system. In this case, execute the zfs list command to confirm the ZFS storage pool corresponding to the mount point of the directory in which the file is located. Then, execute zpool status <*zpool name*> to confirm the physical device path of the PCIe card to which a LU or hard disk is connected.

If MPxIO performs management, use the mpathadm command to display the device path of the physical hard disk corresponding to a LU. Then, confirm the physical device path of the PCIe card that is connected to the physical hard disk.

c. **If the virtual disk service to which the PCIe card requiring maintenance is assigned is found in steps a and b, see the [CLIENT] part for the virtual disk service displayed in step a. Confirm the virtual disk and guest domain to which the backend of the virtual disk service is assigned.**
The display format is "*<virtual disk>@<guest domain>*."

4. **If there is any guest domain that is virtually using the PCIe card requiring maintenance, delete the virtual device (vnet, vdisk) and the virtual service (vsw, vds).**
   a. **Log in to the guest domain to stop the use of the virtual device.**
   If the virtual device is used by the duplication function, release it using the duplication function so as not to use the target virtual device.
   b. **Delete the virtual device and the virtual service using the ldm command from the control domain.**
   If you need to restore the original configuration after performing maintenance on the PCIe card, make a note of the setting information in advance.

- For virtual network

```
# ldm remove-vnet <virtual network> <guest domain>
# ldm remove-vswitch <virtual network switch>
```

- For virtual disk

```
# ldm remove-vdisk <virtual disk> <guest domain>
# ldm remove-vdiskserver <virtual disk service>
```

5. **If the PCIe card requiring maintenance belongs to the root domain, connect to the console of the root domain.**
If it belongs to the control domain, operations are performed from the control domain console. Thus, you do not have to perform this step.

6. **Execute the svcadm enable command to activate the hotplug service.**

```
# svcadm enable hotplug
```

7. **Execute the cfgadm -a command to confirm the Ap_ID of the PCIe card requiring maintenance and its status.**
Confirm the Ap_ID and make a note of it.

In the following example, [Receptacle] and [Occupant] contain "connected" and "configured", respectively, which indicates that the PCIe card requiring maintenance is incorporated into the logical domain.

```
# cfgadm -a
Ap_Id                Type         Receptacle   Occupant     Condition
BB#0-PCI#0           pci-pci/hp   connected    configured   ok
```

8. **Execute the cfgadm -c command to release the PCIe card requiring maintenance from the logical domain.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c unconfigure Ap_Id
```

9. **Execute the cfgadm -c command to stop the power supply to the PCIe card requiring maintenance.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c disconnect Ap_Id
```

10. **Execute the cfgadm -a command to confirm the status of the PCIe card again.**

    In the following example, [Receptacle] and [Occupant] contain "disconnected" and "unconfigured", respectively, which indicates that the PCIe card requiring maintenance is released from the logical domain.

```
# cfgadm -a
Ap_Id                Type         Receptacle   Occupant     Condition
BB#0-PCI#0           pci-pci/hp   disconnected unconfigured ok
```

11. **Execute the cfgadm -x command to cause the ATTENTION LED on the PCIe card cassette requiring maintenance to blink.**
    Enter the Ap_ID you noted in advance.

```
# cfgadm -x led=attn,mode=blink Ap_Id
```

13.4.2 Active/Hot maintenance (with DR)

Note - To perform active/hot maintenance without using PHP, use DR of the system board on the physical partition. For information on the versions of XCP and Oracle VM Server for SPARC/SRU that support DR, see the latest *Product Notes*.
Note - Active/hot maintenance without using PHP can be performed only for a building block configuration.

1. **Open the rack door.**
2. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."

3. **Release from the physical partition the chassis in which the PCIe card requiring maintenance is mounted.**
   a. **Referencing step 5 in "13.3 Checking If PCI Hot Plug (PHP) Can Be Used," confirm the logical domains to which the PCIe root complex and PCIe slot of the chassis with the maintenance target mounted are assigned.**
   b. **Execute the ldm list-bindings <*domain name*> command for these logical domains to confirm the name of the guest domain to which the virtual service (vsw, vds) is provided.**
   In the following example, "rootdom", the logical domain name to which the PCIe card is assigned, is specified.

```
# ldm list-bindings rootdom
------------------------Ommitted------------------------
VSW
    NAME         MAC               NET-DEV   ID   DEVICE     LINKPROP
DEFAULT-VLAN-ID PVID ......
    vsw0         xx:xx:xx:xx:xx:xx net4       0    switch@0             1
        1
        PEER                       MAC               PVID VID
 MTU   MAXBW .....
        vnet0@guest1(*1)          xx:xx:xx:xx:xx:xx 1
1500

------------------------Ommitted------------------------
VDS
   NAME          VOLUME         OPTIONS          MPGROUP        DEVICE
   vds0          vol0                                           /export/
vdisks/vdisk.img (*2)
                 vol1                                           /dev/zvol/
dsk/rpool/zvdisk1
                 vol2                                           /dev/dsk/
cxtxxxxxxxxxxxxxxxdxsx
       CLIENT                      VOLUME
       vdisk1@guest1               vol0  (*1)
       vdisk2@guest2               vol1  (*1)
       vdisk3@guest3               vol2  (*1)
------------------------Ommitted------------------------
```

*1: Guest domain that uses the virtual device

*2: Virtual disk backend

   c. **If the guest domain that uses the virtual device is found in step b, log in to the guest domain to stop the use of the virtual device.**
   If the virtual device is used by the duplication function, release it using the duplication function so as not to use the target virtual device.
   d. **If the logical domains confirmed in step a are I/O domains, stop the I/O domains and delete the assigned PCIe slot.**
   If you need to restore the original configuration after performing maintenance on the PCIe card, make a note of the deleted PCIe slot and the domain name in advance.

```
# ldm stop iodomain
# ldm remove-io /BB1/PCI0 iodomain
```

e. **Release from the physical partition the chassis in which the PCIe card requiring maintenance is mounted.**
For details, see "5.2 Releasing a Chassis from the Physical Partition."

4. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

13.4.3 Inactive/Hot maintenance

Note - Inactive/hot maintenance can be performed only for a building block configuration. For a single-chassis configuration, system-stopped maintenance should be performed.

1. **Open the rack door.**
2. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
3. **Power off the physical partition requiring maintenance.**
For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."

13.4.4 System-stopped maintenance

The PCIe cards can be removed/installed while the input power to the chassis is on (power cord is connected). System-stopped maintenance is also described as maintenance performed while the power cord remains connected.

1. **Open the rack door.**
2. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
3. **Stop the entire system.**
For details, see "5.4 Stopping the Entire System."

13.5 Removing a PCI Express Card

This section describes the procedure for removing a PCIe card. Perform reduction using the same procedure.
For installation, remove the filler for a PCIe card instead of removing a PCIe card.
Enable the removal of the PCIe card before attempting to remove it. For details, see "13.4 Enabling the Removal of a PCI Express Card."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

13.5.1 Accessing a PCI Express card cassette

1. **Lower the cable support.**
   For details, see "5.5.1 Lowering the cable support."

Note - If the crossbar cables are fixed to the cable support with the hook-and-loop fastener, remove the hook-and-loop fastener.

2. **Remove the cables connected to the PCIe card cassette requiring maintenance.**

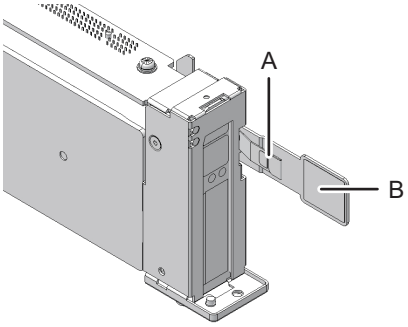
Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.

13.5.2 Removing a PCI Express card cassette

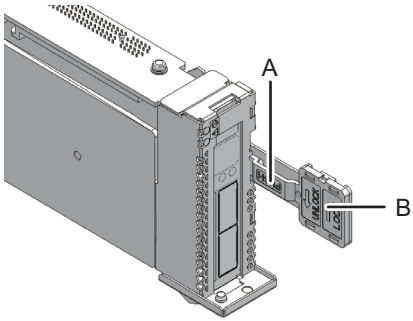
There are two types of PCIe card cassettes. The shapes of the latch (A in the figure) and lever (B in the figure) vary depending on the type of the PCIe card cassette, but the same removal procedure applies. For the types of PCIe card cassettes, see "Figure 13-3."
Unless otherwise specified, the figures explained in this section use Type-1.

Figure 13-3 Types of PCIe card cassettes

Type-1

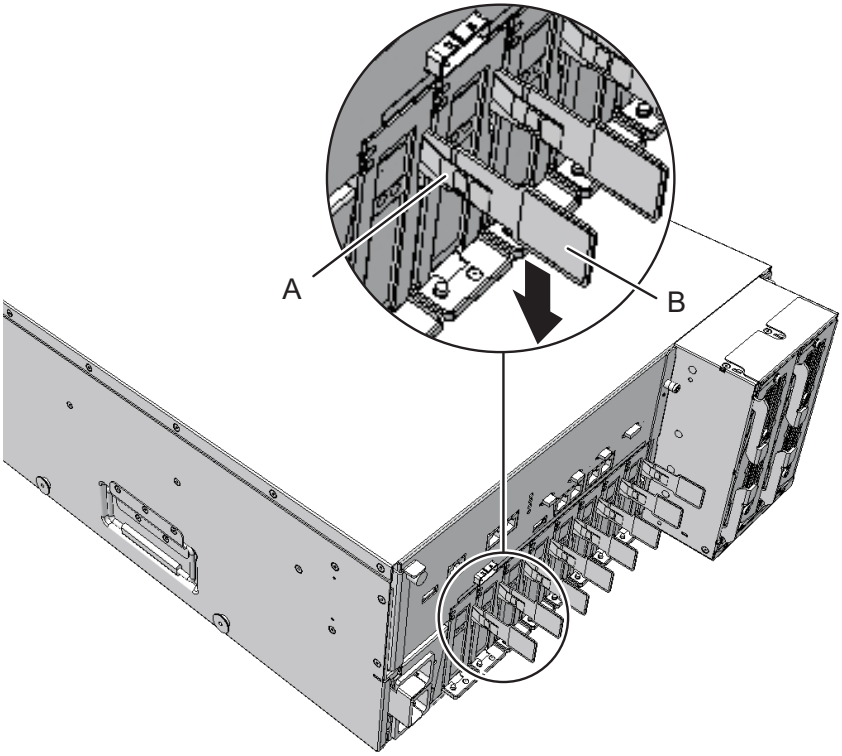


Type-2



1. **Lower the lever (B in the figure) of the PCIe card cassette while pushing the latch (A in the figure).**

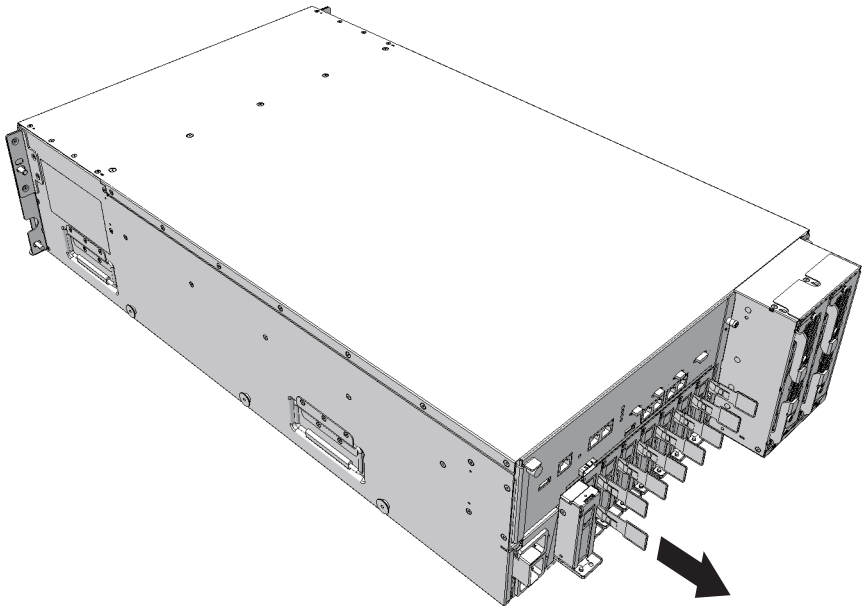
Figure 13-4 Lever of PCIe card cassette



2. **Hold the lever and carefully pull the PCIe card cassette out of the PCI slot to remove it.**

Note - Place the removed PCIe card cassette on a grounded antistatic ESD mat.

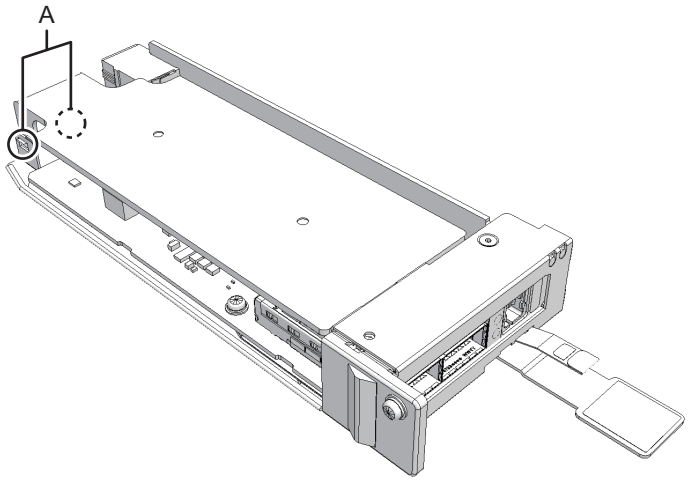
Figure 13-5 Removing the PCIe card cassette



13.5.3 Removing a PCI Express card

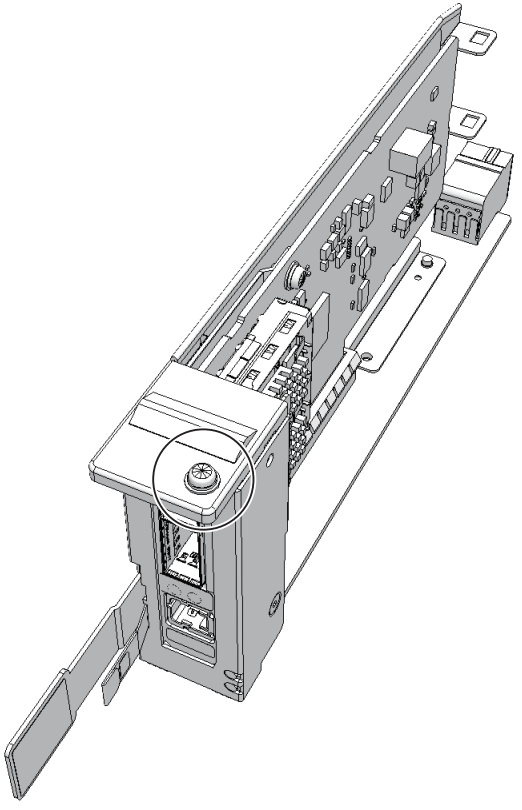
1. **Remove the cover while pushing the clip (A in the figure) at the rear of the cover.**

Figure 13-6 Clip at rear of cover



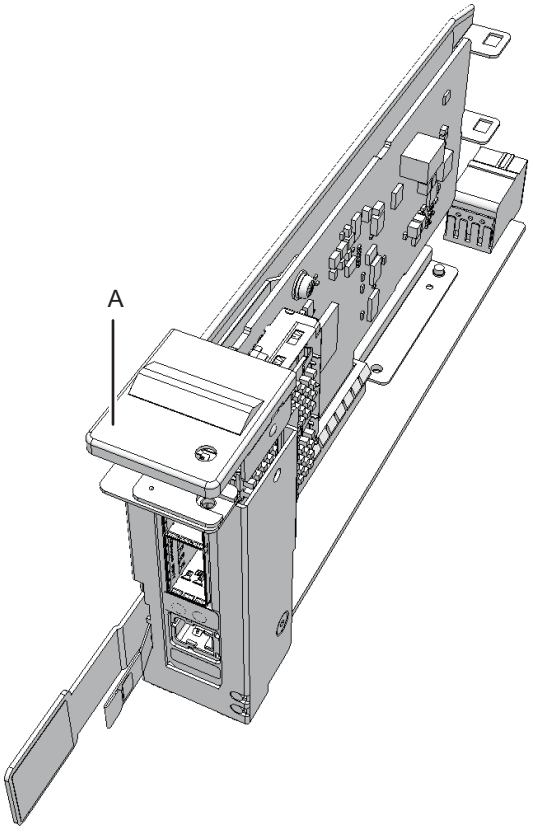
2. **Remove the screw securing the PCIe card cassette.**

Figure 13-7 Removing the screw



3. **Remove the bracket (A in the figure) from the PCIe card.**

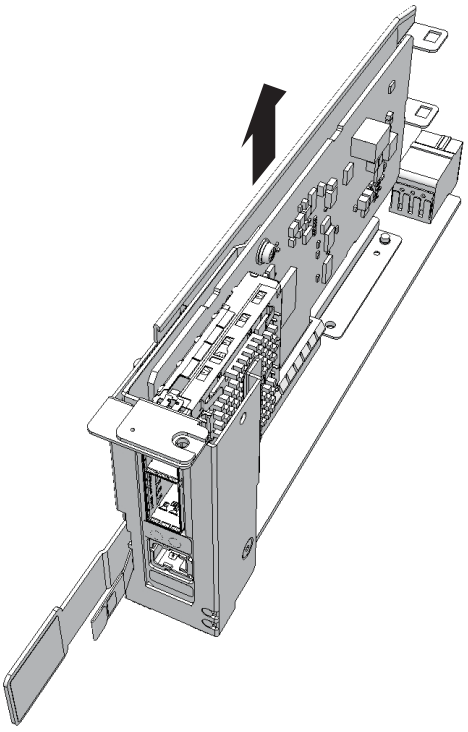
Figure 13-8 Removing the bracket



4. **Remove the PCIe card from the PCIe card cassette.**
   For installation, you do not have to perform this step. Remove the filler for the PCIe card from the PCIe card cassette.

Note - Do not forcibly remove the PCIe card from the PCIe card cassette. If excessive force is used to remove the PCIe card, it may be damaged.
Note - Place the removed PCIe card on a grounded antistatic ESD mat.

Figure 13-9 Removing the PCIe card



13.6 Installing a PCI Express Card

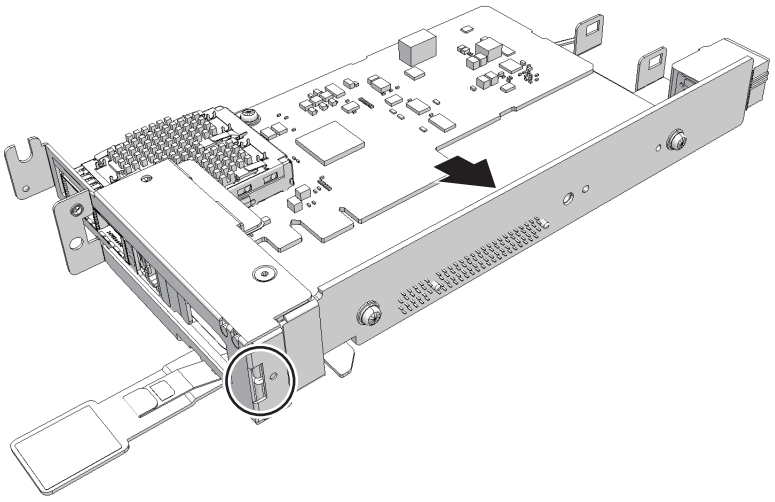
This section describes the procedure for installing a PCIe card. Perform expansion using the same procedure. When removing a PCIe card, install the filler unit instead of another PCIe card after removing the PCIe card.

13.6.1 Installing a PCI Express card

1. **Install the PCIe card by inserting it into the connector of the PCIe card cassette.**
   For removal of a PCIe card, you do not have to perform this step. Attach the filler for the PCIe card to the PCIe card cassette.

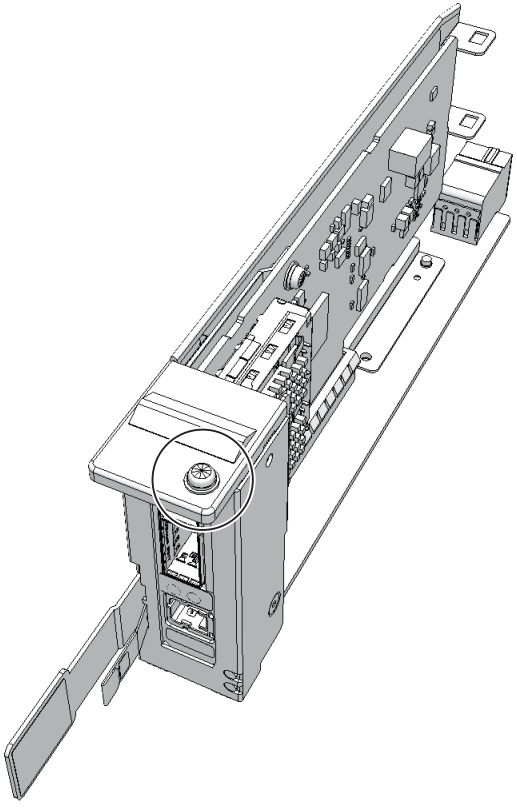
Note - Confirm that the tab of the PCIe card or the tab of the filler for the PCIe card is inserted in the notch of the PCIe card cassette.

Figure 13-10 Installing a PCIe card



2. **Install the bracket for the PCIe card, and secure it with the screw.**

Figure 13-11 Installing the bracket



3. **Mount the cover on the PCIe card cassette.**

13.6.2 Installing a PCI Express card cassette

Note - When mounting a PCIe card cassette, check the connectors on both of the chassis and PCIe card cassette beforehand to confirm that no pin is bent and all the pins are neatly arranged in lines. If a PCIe card cassette is mounted with a bent pin in a connector, the chassis or PCIe card cassette may be damaged. Also, carefully proceed with the work to prevent any pin from being bent.

1. **Hold the lever of the PCIe card cassette, and carefully insert it into the PCIe slot.**

Note - Slide the PCIe card cassette along the rail at the bottom of the PCIe slot.
Note - Do not forcibly push the PCIe card cassette into the PCIe slot. Using excessive force may damage the component or the chassis.

2. **Raise the lever of the PCIe card cassette while pushing the latch and secure it.**

Note - Ensure that the PCIe card cassette is firmly inserted and secured.

13.6.3 Restoring the chassis

1. **Connect the cables to the PCIe card cassette.**

Note - Reinstall the cables of the PCIe card cassettes in their original positions by referring to notes that you made prior to the start of maintenance.

2. **Lift the cable support to fix it.**
For details, see "6.5.2 Fixing the cable support."

13.7 Restoring the System

This section describes the procedures for restoring the system after replacement, addition, and removal of PCIe cards. The restoration procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Hot maintenance (with PHP)
- Active/Hot maintenance (with DR)
- Inactive/Hot maintenance
- System-stopped maintenance

13.7.1 Active/Hot maintenance (with PHP)

1. **Display the Oracle Solaris super-user prompt.**
2. **Execute the cfgadm -c command to start the power supply to the PCIe card requiring maintenance.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c connect Ap_Id
```

3. **Execute the cfgadm -c command to incorporate the PCIe card requiring maintenance into the logical domain.**
   Enter the Ap_ID you noted in advance.

```
# cfgadm -c configure Ap_Id
```

4. **Execute the cfgadm -a command to confirm that the PCIe card requiring maintenance has been incorporated into the logical domain.**
   In the following example, [Receptacle], [Occupant], and [Condition] contain "connected", "configured", and "ok", respectively, which indicates that the PCIe card requiring maintenance is incorporated into the logical domain.

```
# cfgadm -a
Ap_Id                Type         Receptacle   Occupant
Condition
BB#0-PCI#0           pci-pci/hp   connected    configured   ok
```

5. **Execute the svcadm disable command to disable the hotplug service.**

```
# svcadm disable hotplug
```

6. **If you deleted the virtual device and the virtual service in "13.4.1 Active/Hot maintenance (with PHP)," add them based on the information you made a note of and reassign them to the guest domain.**
   For details on how to add a virtual device and a virtual service, see the *Oracle VM Server for SPARC Administration Guide*.

7. **Close the rack door.**

13.7.2 Active/Hot maintenance (with DR)

1. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
2. **Execute the testsb command to confirm that the PCIe card requiring maintenance is recognized.**
   When you enter the "-y" option for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board 00-0.

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
3. **Incorporate into the physical partition the chassis in which the PCIe card requiring maintenance is mounted.**
   For details, see "6.2 Incorporating a Chassis into a Physical Partition."
4. **Close the rack door.**

13.7.3 Inactive/Hot maintenance

1. **Log in to the XSCF shell.**
2. **Execute the testsb command to confirm that the PCIe card requiring maintenance is recognized.**
   When you input optional "-y" for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board 00-0.

```
XSCF> testsb -v -y -s 00-0
```

3. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

13.7.4 System-stopped maintenance

1. **Log in to the XSCF shell.**
2. **Execute the testsb command to confirm that the PCIe card requiring maintenance is recognized.**
   When you input optional "-y" for the testsb command, the system automatically answers "y" (yes) in response to an inquiry.

   The following example shows the diagnosis of system board 00-0.

```
XSCF> testsb -v -y -s 00-0
```

   During the diagnosis processing, the show-devs command of OpenBoot PROM is executed, and the result is displayed.
3. **Start the entire system.**
   For details, see "6.4 Starting the Entire System."
4. **Close the rack door.**

Chapter 14

Maintaining the PSU Backplane Unit

This chapter describes the procedure for maintaining the PSU backplane unit mounted in a SPARC M10-4/M10-4S.

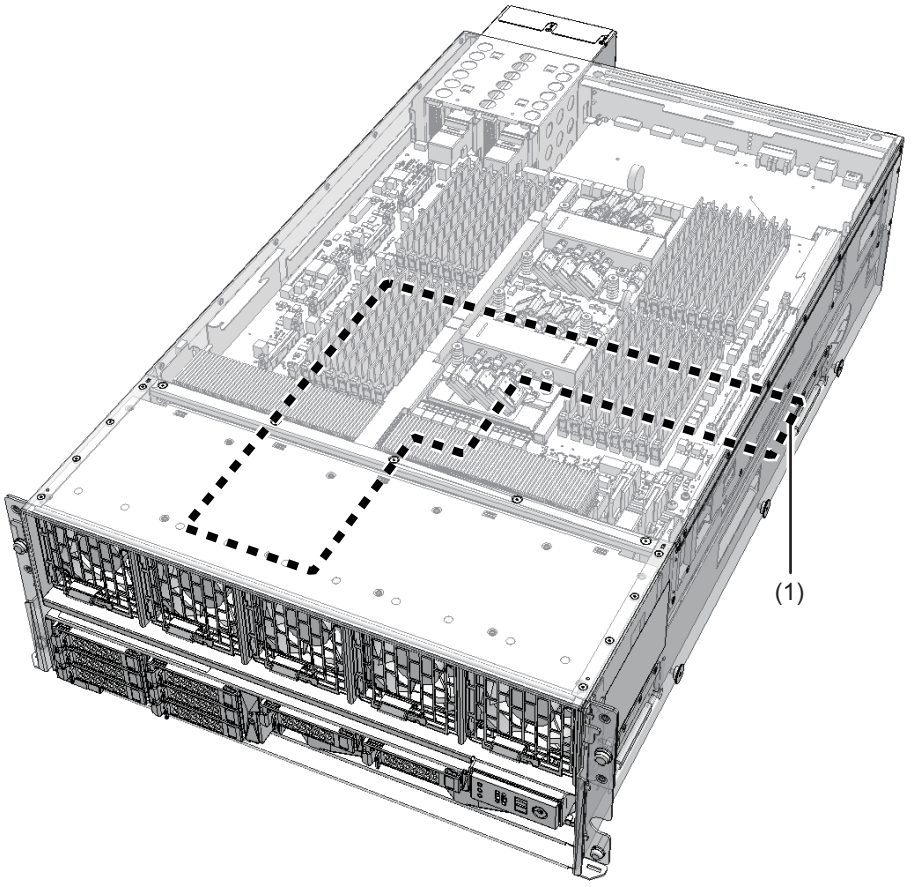
- Location of the PSU Backplane Unit
- Before Maintaining the PSU Backplane Unit
- Enabling the Removal of the PSU Backplane Unit
- Removing the PSU Backplane Unit
- Installing the PSU Backplane Unit
- Restoring the System

14.1 Location of the PSU Backplane Unit

This section describes the location of the PSU backplane unit.
The PSU backplane unit has connectors for connecting multiple power supply units.

Caution - Do not replace a PSU backplane unit at the same time as a CPU memory unit. If you replace a PSU backplane unit at the same time as a CPU memory unit, the system may fail to operate normally. Replace a PSU backplane unit or CPU memory unit, and confirm that the newly installed part is normal by using the showhardconf or showstatus command. Then, replace the other Field Replaceable Unit (FRU).

Figure 14-1 Location of PSU backplane unit



Location number	Component
1	PSU backplane unit (PSUBP)

14.2 Before Maintaining the PSU Backplane Unit

This section describes the types and the flow of maintenance of the PSU backplane unit.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

14.2.1 Types of maintenance

Table 14-1 lists the types of maintenance for the PSU backplane unit. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 14-1 Types of maintenance for PSU backplane unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped
Single-chassis configuration	Unsupported	Unsupported	Unsupported	Supported	Supported
Building block configuration	Unsupported	Supported (*2)	Unsupported	Supported	Supported

*1: For a single-chassis configuration, the inactive/cold maintenance procedure is the same as that for stopping the system, therefore see the procedure for system-stopped maintenance.
*2: It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition.

14.2.2 Maintenance flow

Table 14-2 lists the sequence of the maintenance procedure for the PSU backplane unit.

Table 14-2 Maintenance flow

Details of update process		Replacement
1	Preparation	14.3
2	Removing the PSU backplane unit	14.4
3	Installing the PSU backplane unit	14.5
4	Restoring the system	14.6

14.3 Enabling the Removal of the PSU Backplane Unit

This section describes the preparation that must be completed prior to removing the PSU backplane unit. The preparation procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

14.3.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Release the building block, in which the PSU backplane unit requiring maintenance is mounted, from the physical partition.**
For details, see "5.2 Releasing a Chassis from the Physical Partition."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

14.3.2 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

   For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

14.3.3 System-stopped maintenance

The procedure in the case of system-stopped maintenance is same for the building block configuration and single-chassis configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Stop the entire system.**
For details, see "5.4 Stopping the Entire System."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**
For a single-chassis configuration, you do not have to release the chassis. Proceed to step 7.

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

14.4 Removing the PSU Backplane Unit

This section describes the procedure for removing the PSU backplane unit from the SPARC M10-4/M10-4S. Enable the removal of the PSU backplane unit before attempting to remove it. For details, see "14.3 Enabling the Removal of the PSU Backplane Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

14.4.1 Accessing the PSU backplane unit

1. **Lower the cable support.**
   For details, see "5.5.1 Lowering the cable support."
2. **Remove all the cables connected to the external interface.**
   The cables to be removed are as follows.
   - Interface cable connected to the PCI Express (PCIe) card
   - Crossbar cable
   - XSCF BB control cable
   - XSCF DUAL control cable
   - LAN cable

Note - Make a note of the positions of the cables connected to the external interface before disconnecting them to ensure that they are reinstalled correctly.

---

3. **Remove all PCIe card cassettes.**
   For details, see "13.5.2 Removing a PCI Express card cassette."

Note - Make a note of the positions of the PCIe card cassettes before removing them to ensure that they are reinstalled correctly.

---

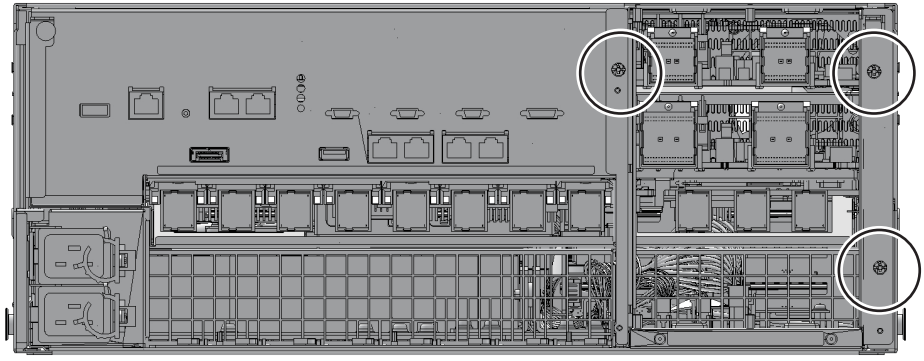
4. **Remove all the crossbar units.**
   For details, see "9.4.2 Removing a crossbar unit."

Note - If no crossbar unit is mounted, proceed to step 6.

---

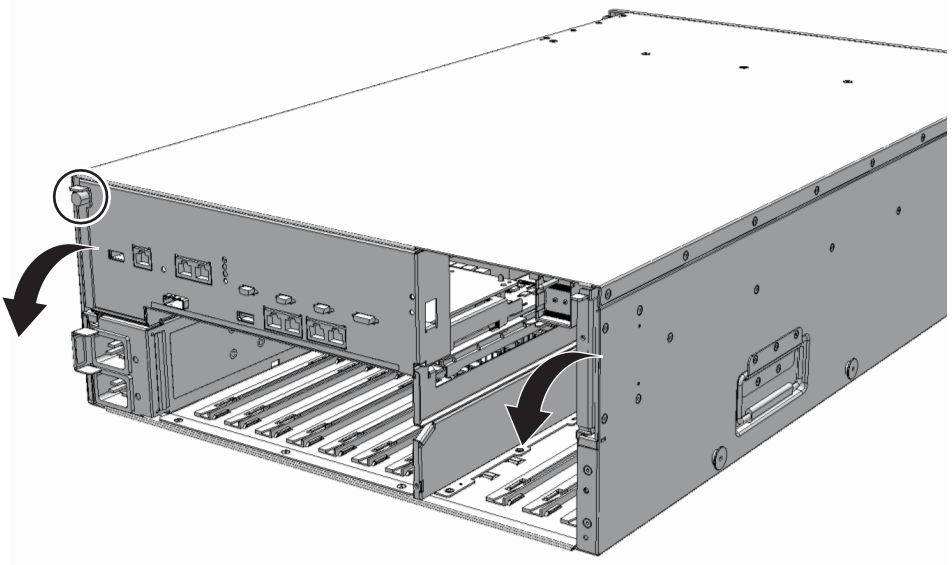
5. **Loosen the three screws securing the mounting frame of the crossbar unit and then remove the frame.**

Figure 14-2 Screws securing the mounting frame



6. **Loosen the screw securing the CPU memory unit and then lower the right and left levers to the horizontal position.**

Figure 14-3 Screw securing the CPU memory unit



7. **Pull the CPU memory unit out by about 10 cm (3.9 in.)**
8. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."
9. **Remove all the power supply units.**
   For details, see "10.4 Removing a Power Supply Unit."

Note - Make a note of the positions of the power supply units before removing them to ensure that they are reinstalled correctly.

---

10. **Remove all the fan units.**
    For details, see "11.4 Removing a Fan Unit."

Note - Make a note of the locations of the fan units before removing them to ensure that they are reinstalled correctly.

---

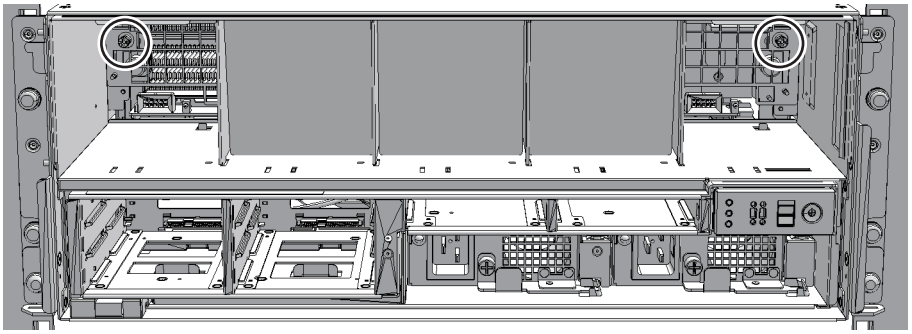
11. **Remove all the internal disks or the HDD filler units.**
    For details, see "12.4 Removing an Internal Disk."

Note - Make a note of the positions of the internal disks before removing them to ensure that they are reinstalled correctly.

---

12. **Loosen the two screws in the fan slot and then remove the fan shelf.**

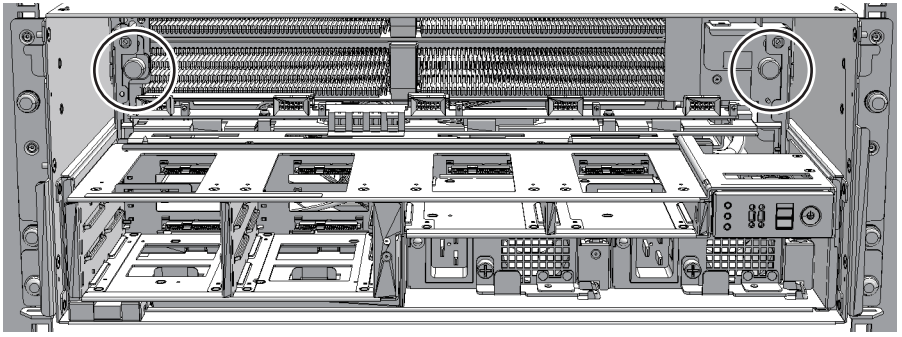
Figure 14-4 Screws in the fan slot



14.4.2 Removing the PSU backplane unit

1. **Loosen the two screws securing the PSU backplane unit and then partially pull out the PSU backplane unit.**

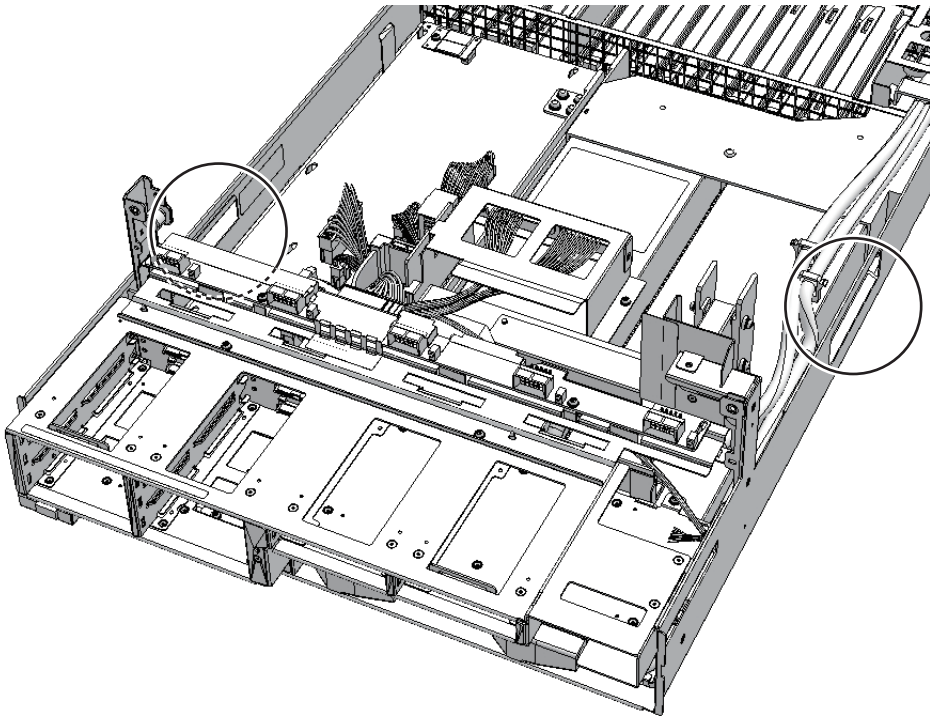
Figure 14-5 Screws securing the PSU backplane unit



2. **Pull the PSU backplane unit out a little more. Then, remove the unit by holding its handle.**

Note - Place the removed PSU backplane unit on a grounded antistatic ESD mat.

Figure 14-6 Handle of PSU backplane unit



3. **Remove the operation panel.**
   For details, see step 2 and later in "15.4.2 Removing the operation panel."

14.5 Installing the PSU Backplane Unit

This section describes the procedure for installing the PSU backplane unit.

14.5.1 Installing the PSU backplane unit

1. **Install the operation panel on the PSU backplane unit.**
   For details, see "15.5.1 Installing the operation panel."
2. **Insert the PSU backplane unit into the chassis by holding the handle.**
3. **Tighten the two screws securing the PSU backplane unit.**

14.5.2 Restoring the chassis

1. **Install the fan shelf and then tighten the two screws in the fan slot.**
2. **Install all the power supply units.**
   For details, see "10.5.1 Installing a power supply unit."

Note - Install the power supply units in their original positions by referring to the notes that you made prior to the start of maintenance.

---

3. **Install all the fan units.**
   For details, see "11.5.1 Installing a fan unit."

Note - Reinstall the fan units in their original locations by referring to the notes you made prior to the start of maintenance.

---

4. **Install all the internal disks or HDD filler units.**
   For details, see "12.5 Installing an Internal Disk."

Note - Reinstall the internal disks in their original locations by referring to the notes that you made prior to the start of maintenance.

---

5. **Install the front cover.**
   For details, see "6.5.3 Installing the front cover."
6. **Insert the CPU memory unit in the chassis.**
7. **Raise the right and left levers of the CPU memory unit and then tighten the one screw.**
8. **Install the mounting frame for the crossbar unit and then tighten the three screws.**

Note - If no crossbar unit is mounted, proceed to step 10.

---

9. **Install all the crossbar units.**
   For details, see "9.5.1 Installing a crossbar unit."
10. **Install all the PCIe card cassettes.**
    For details, see "13.6.2 Installing a PCI Express card cassette."

Note - Reinstall the PCIe card cassettes in their original positions by referring to the notes that you made prior to the start of maintenance.

---

11. **Connect all the cables to the external interface.**
    The cables to be connected are as follows.
    - Interface cable connected to the PCIe card

- Crossbar cable
- XSCF BB control cable
- XSCF DUAL control cable
- LAN cable

Note - Reconnect the cables of the external interface in their original positions by referring to the notes that you made prior to the start of maintenance.

12. **Lift the cable support to fix it.**
    For details, see "6.5.2 Fixing the cable support."

14.6 Restoring the System

This section describes the procedure for restoring the system after installing the PSU backplane unit. The restoration procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

14.6.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**

For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is incorporated into the physical partition, and the physical partition is powered on.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   02: PPAR-ID of the destination where the chassis to start the diagnosis is connected (You can specify only one of these.)

```
XSCF> diagxbu -y -b 00 -p 02
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

5. **Incorporate the chassis, in which the PSU backplane unit requiring maintenance is mounted, into the physical partition.**
   For details, see "6.2 Incorporating a Chassis into a Physical Partition."

6. **Close the rack door.**

14.6.2 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

The example below specifies the following:

00: BB-ID of the chassis to start the diagnosis

01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Power on the physical partition requiring maintenance.**
For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
6. **Close the rack door.**

14.6.3 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit.**
For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

For a single-chassis configuration, you do not have to incorporate the chassis. Proceed to step 5.

3. **Execute the diagxbu command to diagnose the crossbar cables.**
Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

The example below specifies the following:

00: BB-ID of the chassis to start the diagnosis

01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Start the entire system.**
For details, see "6.4 Starting the Entire System."

6. **Close the rack door.**

Chapter 15

Maintaining the Operation Panel

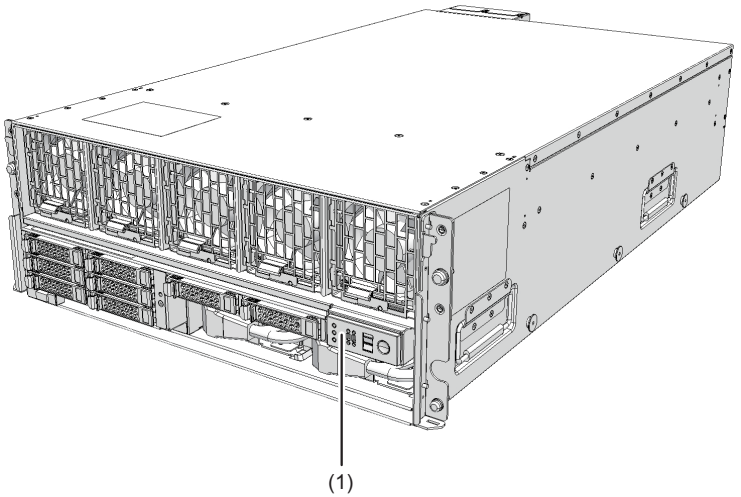
This chapter describes the procedure for maintaining the operation panel mounted on the SPARC M10-4/M10-4S.

- Location of the Operation Panel
- Before Maintaining the Operation Panel
- Enabling the Removal of the Operation Panel
- Removing the Operation Panel
- Installing the Operation Panel
- Restoring the System

15.1 Location of the Operation Panel

This section describes the location of the operation panel.

Figure 15-1 Location of the operation panel



Location number	Component
1	Operation panel (OPNL)

15.2 Before Maintaining the Operation Panel

This section describes the types and flow of the maintenance of the operation panel, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

15.2.1 Types of maintenance

Table 15-1 lists the types of maintenance for the operation panel. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 15-1 Types of maintenance for operation panel

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold (*1)	System stopped
Single-chassis configuration	Unsupported	Unsupported	Unsupported	Supported	Supported
Building block configuration	Unsupported	Supported (*2)	Unsupported	Supported	Supported

*1: For a single-chassis configuration, the inactive/cold maintenance procedure is the same as that for stopping the system, therefore see the procedure for system-stopped maintenance.
*2: It is necessary to use dynamic reconfiguration (DR) to disconnect a chassis requiring maintenance from the physical partition.

15.2.2 Maintenance flow

Table 15-2 lists the sequence of the maintenance procedure for the operation panel.

Table 15-2 Maintenance flow

Details of update process		Replacement
1	Preparation	15.3
2	Removing the operation panel	15.4
3	Installing the operation panel	15.5
4	Restoring the system	15.6

15.2.3 Precautions for replacement

Note the following point when replacing the operation panel:

- If you replace the operation panel, set the BB-ID for the new operation panel to the same value as that prior to the start of maintenance.

15.3 Enabling the Removal of the Operation Panel

This section describes the preparations that must be completed prior to the removal of the operation panel. The preparation procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Cold maintenance

- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

15.3.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Release the chassis, in which the operation panel requiring maintenance is mounted, from the physical partition.**
For details, see "5.2 Releasing a Chassis from the Physical Partition."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

15.3.2 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

15.3.3 System-stopped maintenance

The procedure in the case of system-stopped maintenance is same for the building block configuration and single-chassis configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring**

maintenance.

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Stop the entire system.**
   For details, see "5.4 Stopping the Entire System."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**
   For a single-chassis configuration, you do not have to release the chassis. Proceed to step 7.

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

15.4 Removing the Operation Panel

This section describes the procedure for removing the operation panel.
Enable the removal of the operation panel before attempting to remove it. For details, see "15.3 Enabling the Removal of the Operation Panel."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

15.4.1 Accessing the operation panel

1. **Check the ID switch on the operation panel and record the BB-ID set for the chassis requiring maintenance.**
2. **Lower the cable support.**
   For details, see "5.5.1 Lowering the cable support."
3. **Remove all the cables connected to the external interface.**
   The cables to be removed are as follows.
   - Interface cable connected to the PCI Express (PCIe) card
   - Crossbar cable
   - XSCF BB control cable
   - XSCF DUAL control cable
   - LAN cable

Note - Make a note of the positions of the cables connected to the external interface before disconnecting them to ensure that they are reinstalled correctly.

---

4. **Remove all PCIe card cassettes.**
   For details, see "13.5.2 Removing a PCI Express card cassette."

Note - Make a note of the positions of the PCIe card cassettes before removing them to ensure that they are reinstalled correctly.

---

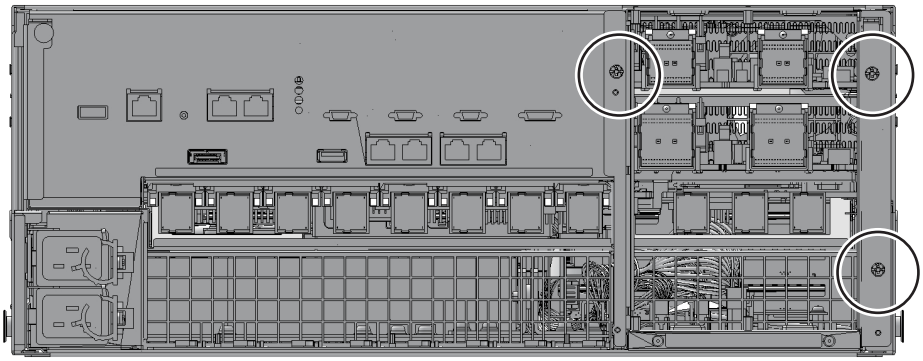
5. **Remove all the crossbar units.**
   For details, see "9.4.2 Removing a crossbar unit."

Note - If no crossbar unit is mounted, proceed to step 7.

---

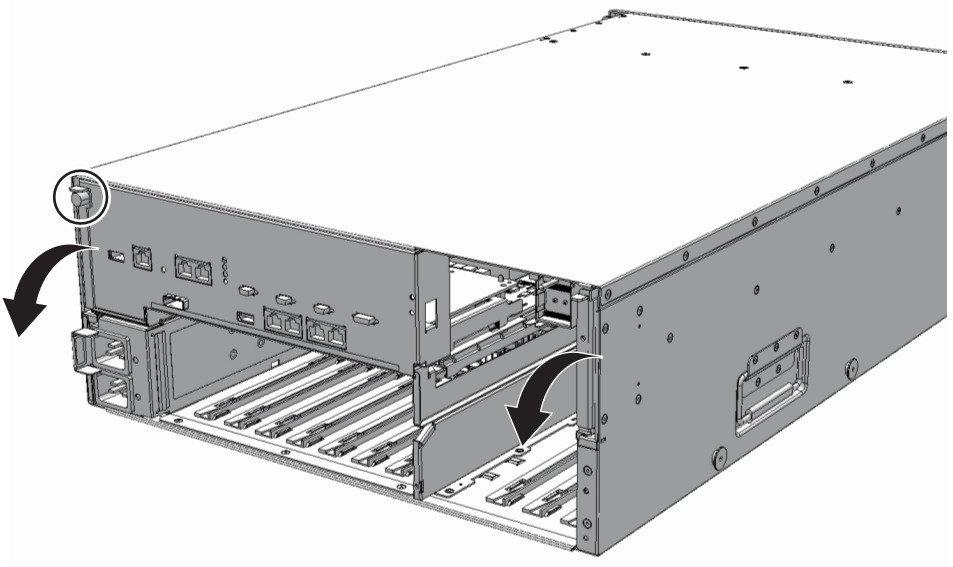
6. **Loosen the three screws securing the mounting frame of the crossbar unit and then remove the frame.**

Figure 15-2 Screws securing the mounting frame



7. **Loosen the screw securing the CPU memory unit and lower the right and left levers to the horizontal position.**

Figure 15-3 Screw securing CPU memory unit

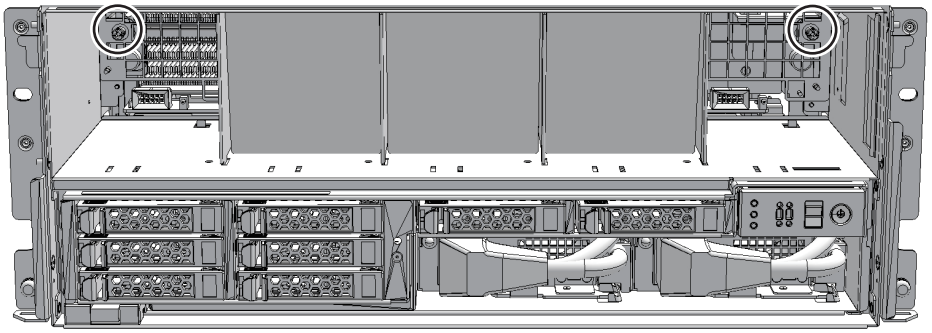


8. **Pull out the CPU memory unit by about 10 cm (3.9 in.)**
9. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."
10. **Pull out the power supply unit by about 10 cm (3.9 in.)**
    For details, see "10.4 Removing a Power Supply Unit."
11. **Remove all the fan units.**
    For details, see "11.4 Removing a Fan Unit."

Note - Make a note of the locations of the fan units before removing them to ensure that they are reinstalled correctly.

12. **Loosen the two screws in the fan slot and then remove the fan shelf.**

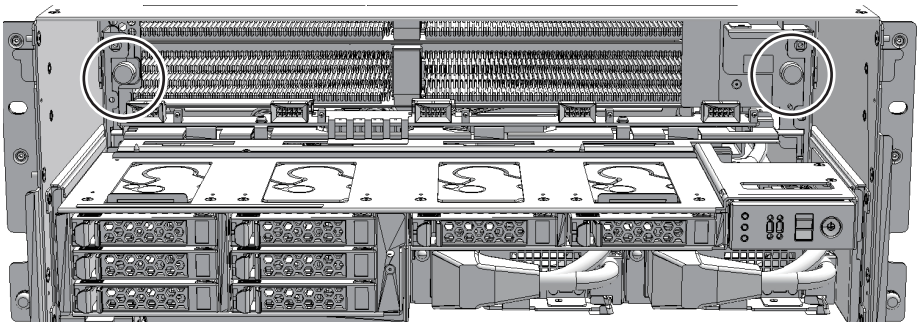
Figure 15-4 Screws in the fan slot



15.4.2 Removing the operation panel

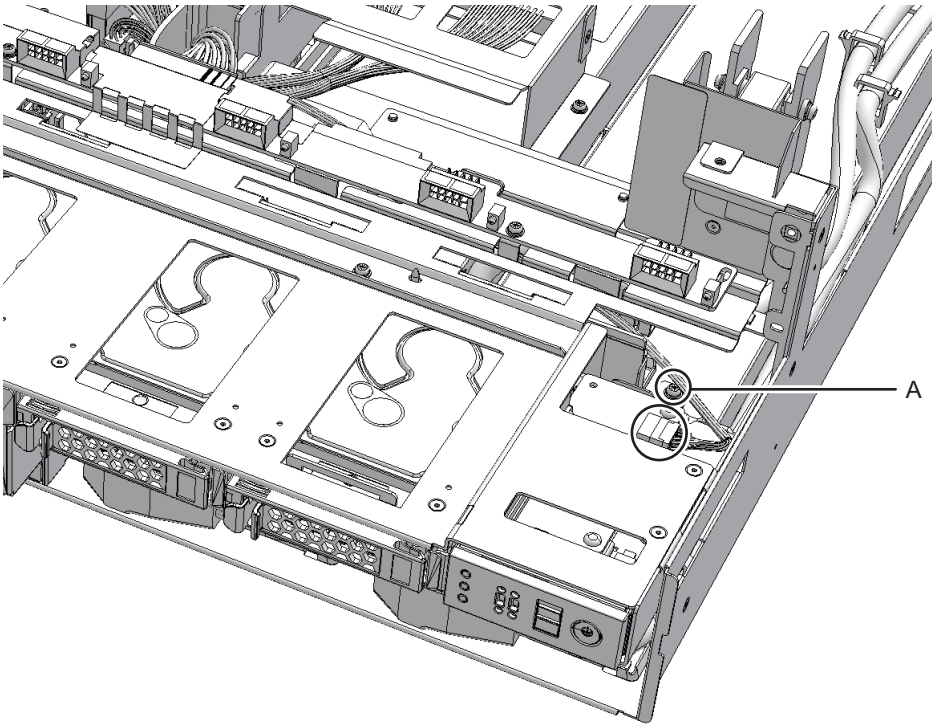
1. **Loosen the two screws securing the PSU backplane unit and partially pull out the PSU backplane unit.**

Figure 15-5 Screws securing the PSU backplane unit



2. **Remove the cable from the operation panel and loosen one screw (A in the figure).**

Figure 15-6 Cables and screws of the operation panel



3. **Pull the operation panel forward to remove it.**

Note - Place the removed operation panel on a grounded antistatic ESD mat.

15.5 Installing the Operation Panel

This section describes the procedure for installing the operation panel.

15.5.1 Installing the operation panel

1. **Set the BB-ID of the operation panel to the value prior to the start of maintenance.**
2. **Place the operation panel in the mounting position and then tighten one screw.**

15.5.2 Restoring the chassis

1. **Connect the cables to the operation panel.**
2. **Reinstall the PSU backplane unit in its original position and then tighten the two screws.**
3. **Reinstall the fan shelf and then tighten the two screws in the fan slot.**
4. **Reinstall the power supply unit in its original position.**
   For details, see "10.5.1 Installing a power supply unit."
5. **Install all the fan units.**
   For details, see "11.5.1 Installing a fan unit."

Note - Reinstall the fan units in their original positions by referring to the notes you made prior to the start of maintenance.

---

6. **Install the front cover.**
   For details, see "6.5.3 Installing the front cover."

Note - Check that the front cover is firmly attached and secured.

---

7. **Insert the CPU memory unit into the chassis.**
8. **Raise the right and left levers of the CPU memory unit and then tighten the one screw.**
9. **Install the mounting frame for the crossbar unit and then tighten the three screws.**

Note - If no crossbar unit is mounted, proceed to step 11.

---

10. **Install all the crossbar units.**
    For details, see "9.5.1 Installing a crossbar unit."
11. **Install all the PCIe card cassettes.**
    For details, see "13.6.2 Installing a PCI Express card cassette."

Note - Reinstall the PCIe card cassettes in their original positions by referring to the notes that you made prior to the start of maintenance.

---

12. **Connect all the cables to the external interface.**
    The cables to be connected are as follows.
    - Interface cable connected to the PCIe card
    - Crossbar cable
    - XSCF BB control cable
    - XSCF DUAL control cable

- LAN cable

Note - Reconnect the cables of the external interface in their original positions by referring to the notes that you made prior to the start of maintenance.

13. **Lift the cable support to fix it.**
    For details, see "6.5.2 Fixing the cable support."

15.6 Restoring the System

This section describes the procedure for restoring the system after installing the operation panel. The restoration procedure differs depending on the maintenance type as follows:

Note - See the procedure for system-stopped maintenance for inactive/cold maintenance in a single-chassis configuration.

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

15.6.1 Active/Cold maintenance

Note - Use the DR of the system board on a physical partition for active/cold maintenance. For the XCP and Oracle VM Server for SPARC/SRU versions that correspond to the DR, see the latest *Product Notes*.
Note - Active/cold maintenance can be performed only for a building block configuration.

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the diagxbu command to diagnose the crossbar cables.**

Diagnosis is performed when the system board of the chassis connected with the crossbar cables is incorporated into the physical partition, and the physical partition is powered on.

The example below specifies the following:

00: BB-ID of the chassis to start the diagnosis

02: PPAR-ID of the destination where the chassis to start the diagnosis is connected (You can specify only one of these.)

```
XSCF> diagxbu -y -b 00 -p 02
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Incorporate the chassis, in which the operation panel requiring maintenance is mounted, into the physical partition.**
For details, see "6.2 Incorporating a Chassis into a Physical Partition."

6. **Close the rack door.**

15.6.2 Inactive/Cold maintenance

Note - Inactive/cold maintenance can be performed only for a building block configuration. The inactive/cold maintenance procedure for a single-chassis configuration is the same as that for stopping the system.

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the

physical partition into which the chassis is incorporated is powered off.

The example below specifies the following:

00: BB-ID of the chassis to start the diagnosis

01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Power on the physical partition requiring maintenance.**
For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
6. **Close the rack door.**

15.6.3 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit.**
For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

   For a single-chassis configuration, you do not have to incorporate the chassis. Proceed to step 5.
3. **Execute the diagxbu command to diagnose the crossbar cables.**
Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

00: BB-ID of the chassis to start the diagnosis

01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Start the entire system.**
For details, see "6.4 Starting the Entire System."

6. **Close the rack door.**

Chapter 16

Maintaining the Crossbar Units of the Crossbar Box

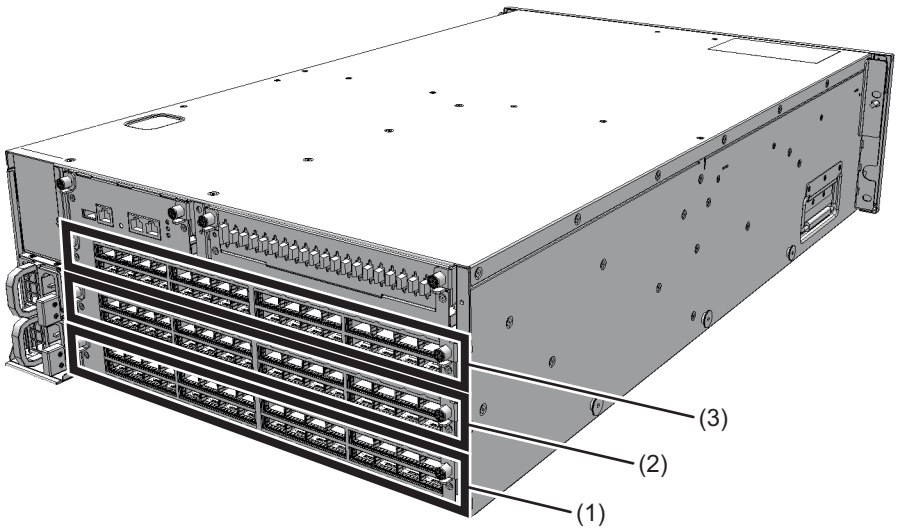
This chapter describes the procedure for maintaining the crossbar units mounted on the crossbar box.

- Configuration of the Crossbar Units
- Before Maintaining a Crossbar Unit
- Enabling the Removal of a Crossbar Unit
- Removing a Crossbar Unit
- Installing a Crossbar Unit
- Restoring the System

16.1 Configuration of the Crossbar Units

This section describes the configuration and the locations of the crossbar units.

Figure 16-1 Location of crossbar units



Location number	Component
1	Crossbar unit (XBUX#0)
2	Crossbar unit (XBUX#1)
3	Crossbar unit (XBUX#2)

16.2 Before Maintaining a Crossbar Unit

This section describes the types and flow of maintenance of the crossbar units.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

16.2.1 Types of maintenance

Table 16-1 lists the types of maintenance for the crossbar units. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 16-1 Types of maintenance for the crossbar unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Unsupported	Supported (*1)	Unsupported	Supported	Supported (*2)

*1: If any physical partition mounted on two or more chassis is currently operating, the crossbar box cannot be powered off.
*2: All the physical partitions must be powered off, and the system must be completely shut down.

16.2.2 Maintenance flow

Table 16-2 lists the sequence of the maintenance procedure for the crossbar units.

Table 16-2 Maintenance flow

Details of update process		Replacement
1	Preparation	16.3
2	Removing the crossbar units	16.4
3	Installing the crossbar unit	16.5
4	Restoring the system	16.6

16.3 Enabling the Removal of a Crossbar Unit

This section describes preparation that must be completed prior to removing a crossbar unit. The preparation procedure differs depending on the maintenance type as follows:

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

16.3.1 Active/Cold maintenance

Note - Confirm that the POWER LED on the crossbar box is off.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

16.3.2 Inactive/Cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

16.3.3 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the crossbar unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

16.4 Removing a Crossbar Unit

This section describes the procedure for removing a crossbar unit.
Enable the removal of the crossbar box before attempting to remove it. For details, see "16.3 Enabling the Removal of a Crossbar Unit."

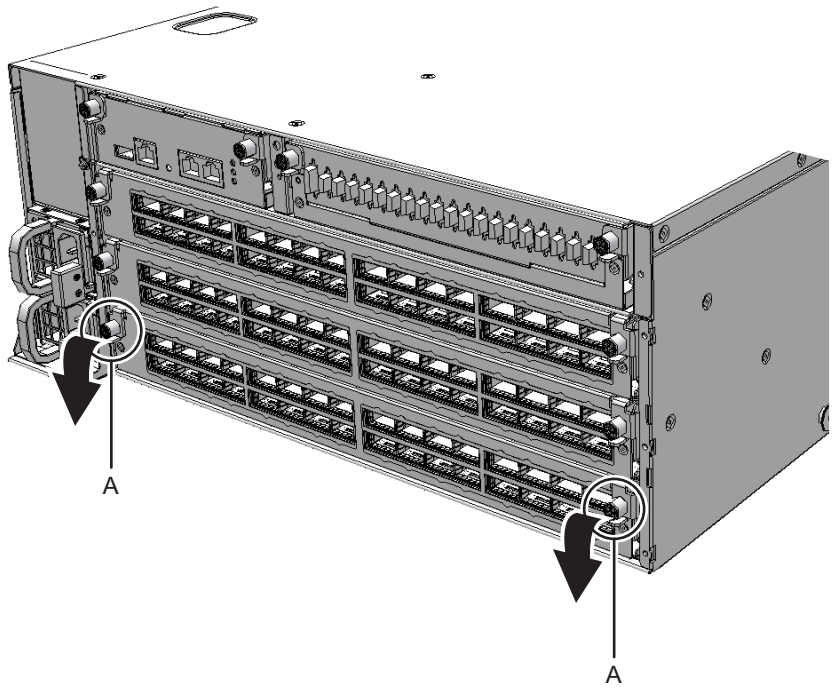
Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

1. **Remove all crossbar cables (optical) connected to the crossbar unit requiring maintenance.**
   For details, see "25.4 Removing a Crossbar Cable (Optical)."

Note - Make a note of the positions of the crossbar cables (optical) before disconnecting them to ensure that they are reinstalled correctly.

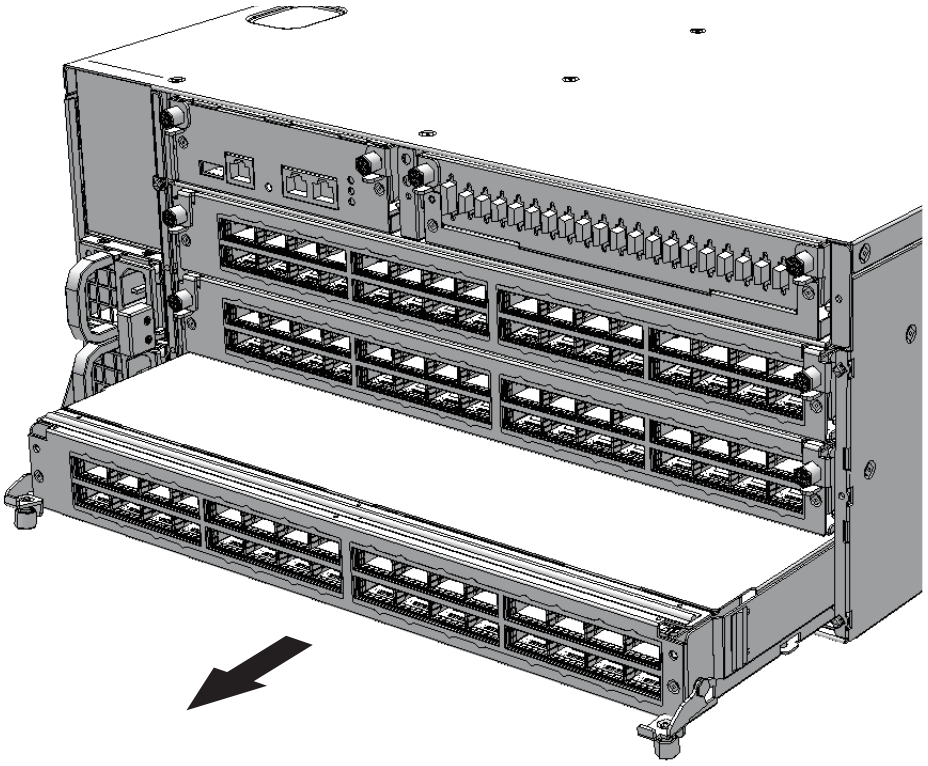
2. **Loosen the two screws (A in the figure) on the right and left sides and lower the levers to release the crossbar unit.**

Figure 16-2 Positions of screws and levers



3. **Hold the levers and partially pull out the crossbar unit.**

Figure 16-3 Pulling out crossbar unit



4. **Support the crossbar unit from below with one hand and remove it carefully.**

Note - Place the removed crossbar unit on a grounded antistatic ESD mat.

16.5 Installing a Crossbar Unit

This section describes the procedure for installing a crossbar unit.

Note - When mounting a crossbar unit, check the connectors on both of the chassis and crossbar unit beforehand to confirm that no pin is bent and all the pins are neatly arranged in lines. If a crossbar unit is mounted with a bent pin in a connector, the chassis or crossbar unit may be damaged. Also, carefully proceed with the work to prevent any pin from being bent.

1. **Carefully insert the crossbar unit into the chassis.**
2. **Close the right and left levers of the crossbar unit and tighten two screws.**

3. **Connect all crossbar cables (optical) to the crossbar unit.**
   For details, see "25.5 Installing a Crossbar Cable (Optical)."

Note - Reinstall the crossbar cables (optical) in their original positions by referring to the notes that you made prior to the start of maintenance.

16.6 Restoring the System

This section describes the procedure for restoring the system after installing the crossbar units. The restoration procedure differs depending on the maintenance type as follows:

- Active/Cold maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

16.6.1 Active/Cold maintenance

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is incorporated into the physical partition, and the physical partition is powered on.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   02: PPAR-ID of the destination where the chassis to start the diagnosis is connected (You can specify only one of these.)

```
XSCF> diagxbu -y -b 00 -p 02
```

3. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

16.6.2 Inactive/Cold maintenance

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

   To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

3. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

16.6.3 System-stopped maintenance

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the crossbar unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the diagxbu command to diagnose the crossbar cables.**

Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

The example below specifies the following:

00: BB-ID of the chassis to start the diagnosis

01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Power on the physical partition requiring maintenance.**
For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."

6. **Close the rack door.**

Chapter 17

Maintaining the XSCF Unit of the Crossbar Box

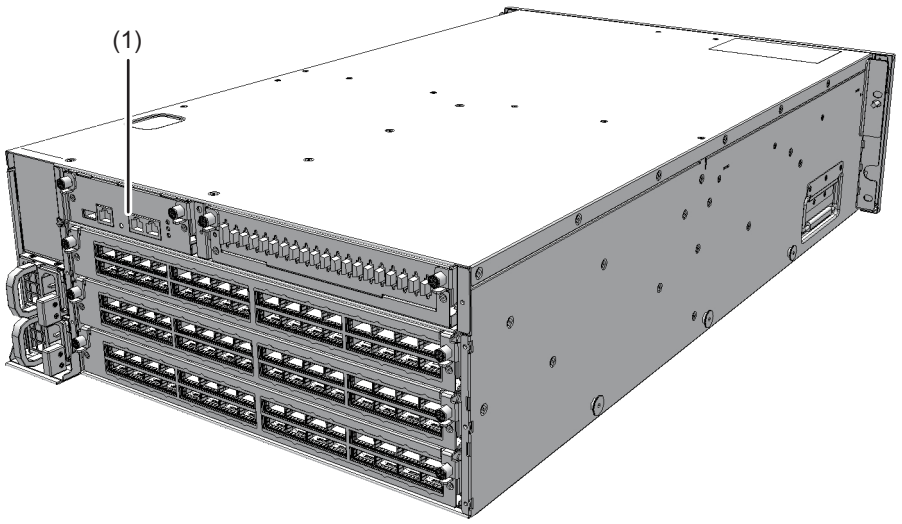
This chapter describes the procedure for maintaining the XSCF unit mounted in the crossbar box.

- Location of the XSCF Unit
- Before Maintaining the XSCF Unit
- Enabling the Removal of the XSCF Unit
- Removing the XSCF Unit
- Installing the XSCF Unit
- Restoring the System

17.1 Location of the XSCF Unit

This section describes the location of the XSCF unit.

Figure 17-1 Location of XSCF unit



Location number	Component
1	XSCF unit (XSCFU)

17.2 Before Maintaining the XSCF Unit

This section describes the types and flow of maintenance of the XSCF unit.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

17.2.1 Types of maintenance

Table 17-1 lists the types of maintenance for the XSCF unit. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 17-1 Type of maintenance for XSCF unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Supported (*1)	Unsupported (*2)	Supported	Unsupported (*2)	Supported (*3)

*1: The XSCF must be configured as a slave before maintenance is started. If the XSCF is operating as the master XSCF, switch it to a standby XSCF.
*2: If any physical partition is currently operating, the crossbar box cannot be powered off.
*3: All the physical partitions must be powered off, and the system must be completely shut down.

17.2.2 Maintenance flow

Table 17-2 lists the sequence of the maintenance procedure for the XSCF unit.

Table 17-2 Maintenance flow

Details of update process		Replacement
1	Preparation	17.3
2	Removing an XSCF unit	17.4
3	Installing an XSCF unit	17.5
4	Restoring the system	17.6

17.3 Enabling the Removal of the XSCF Unit

This section describes the preparations that must be completed prior to removing an XSCF unit. The preparation procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Inactive/Hot maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

17.3.1 Active/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Execute the switchscf command to switch the master XSCF to a standby XSCF.**
   Perform this when the chassis requiring maintenance is operating as a master chassis.

```
XSCF> switchscf -t Standby
```

6. **Execute the replacefru command to release the XSCF unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

17.3.2 Inactive/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Stop the physical partition requiring maintenance.**

For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."

6. **Execute the replacefru command to release the XSCF unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

17.3.3 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the XSCF unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

17.4 Removing the XSCF Unit

This section describes the procedure for removing the XSCF unit.
Enable the removal of the XSCF unit before attempting to remove it. For details, see "17.3 Enabling the Removal of the XSCF Unit."

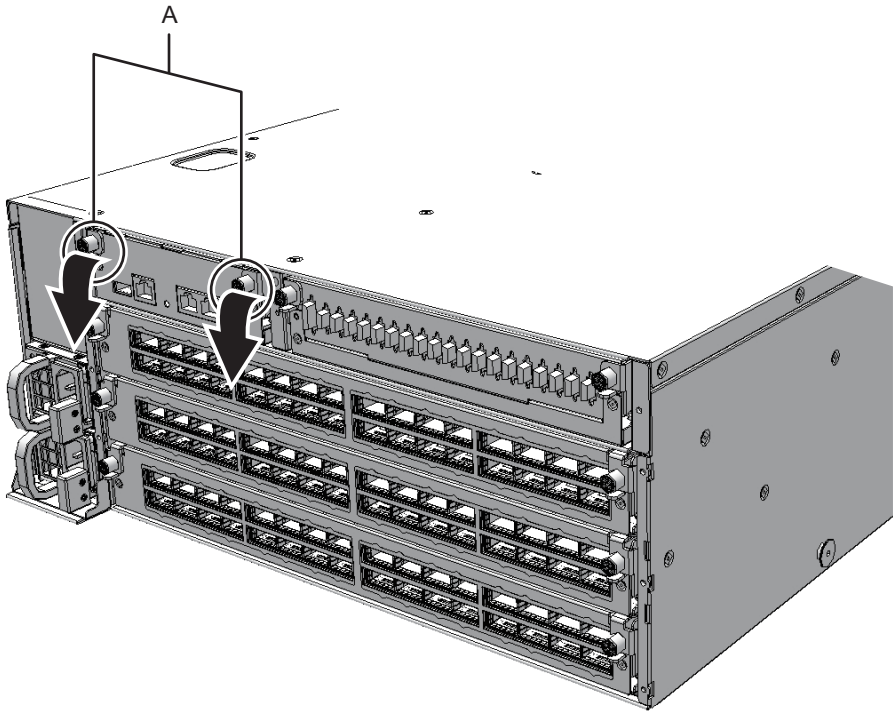
Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

1. **Remove all the cables connected to the maintenance-target XSCF unit.**
   The cables to be removed are as follows.
   - Serial cable
   - LAN cable
   - USB device

Note - The cables connected to the rear of the crossbar box are bundled together and fastened to the right cable support with a hook-and-loop fastener. To remove the cables, first remove the hook-and-loop fastener from the cable support.
Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.

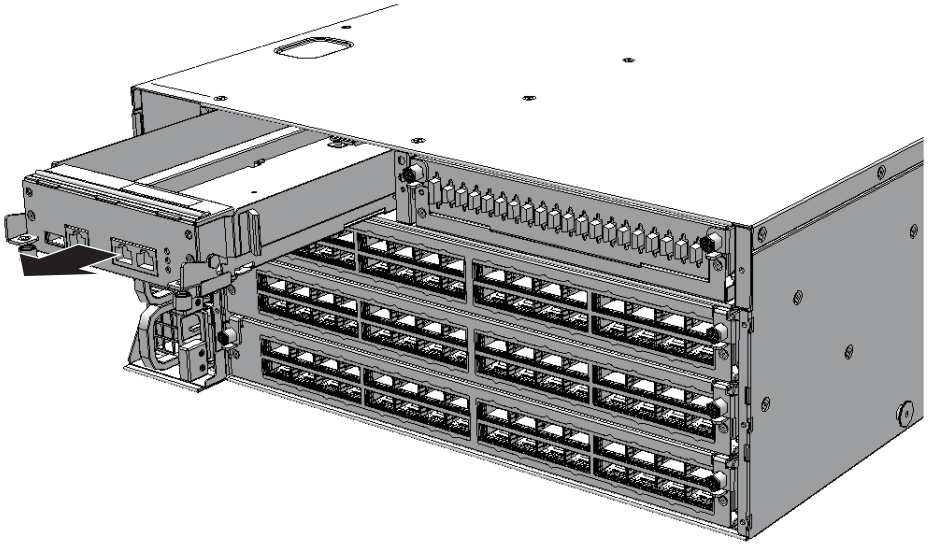
2. **Loosen the two screws (A in the figure) of the XSCF unit and lower the right and left levers to release the XSCF unit.**

Figure 17-2 Positions of screws and levers



3. **Hold the levers and partially pull out the XSCF unit.**

Figure 17-3 Pulling out the XSCF unit



4. **Support the XSCF unit from below with one hand and then remove it carefully.**

Note - Place the removed XSCF unit on a grounded antistatic ESD mat.

17.5 Installing the XSCF Unit

This section describes the procedure for installing the XSCF unit.

Note - When mounting a XSCF unit, check the connectors on both of the chassis and XSCF unit beforehand to confirm that no pin is bent and all the pins are neatly arranged in lines. If an XSCF unit is mounted with a bent pin in a connector, the chassis or XSCF unit may be damaged. Also, carefully proceed with the work to prevent any pin from being bent.

---

1. **Carefully insert the XSCF unit into the chassis.**
2. **Raise the right and left levers and then tighten the two screws.**
3. **Reconnect all the cables to the XSCF unit.**

The cables to be reconnected are as follows.

- Serial cable
- LAN cable
- USB device

Note - Reinstall the cables in their original positions by referring to the notes that you made prior to the start of maintenance.
Note - After connecting the cables, use the hook-and-loop fastener to bundle and fix the cables to the cable support at the rear.

17.6 Restoring the System

This section describes the procedure for restoring the system after installing the XSCF unit. The restoration procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Inactive/Hot maintenance
- System-stopped maintenance

17.6.1 Active/Hot maintenance

1. **Check that the XSCF STANDBY LED on the operation panel is on.**
   For the location of LEDs, see "2.3.3 LEDs on each component."
2. **Return to the operation of the XSCF firmware replacefru command to confirm that the XSCF unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the switchscf command to switch the standby XSCF to the master XSCF.**
   Execute the command if the chassis requiring maintenance has been switched to the standby XSCF.

```
XSCF> switchscf -t Active
```

4. **Close the rack door.**

17.6.2 Inactive/Hot maintenance

1. **Return to the operation of the XSCF firmware replacefru command to confirm**

that the XSCF unit has been incorporated into the system.
For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

2. **Power on the physical partition requiring maintenance.**
For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
3. **Close the rack door.**

17.6.3 System-stopped maintenance

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the XSCF unit has been incorporated into the system.**
For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Start all the physical partitions.**
For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

Chapter 18

Maintaining the Power Supply Units of the Crossbar Box

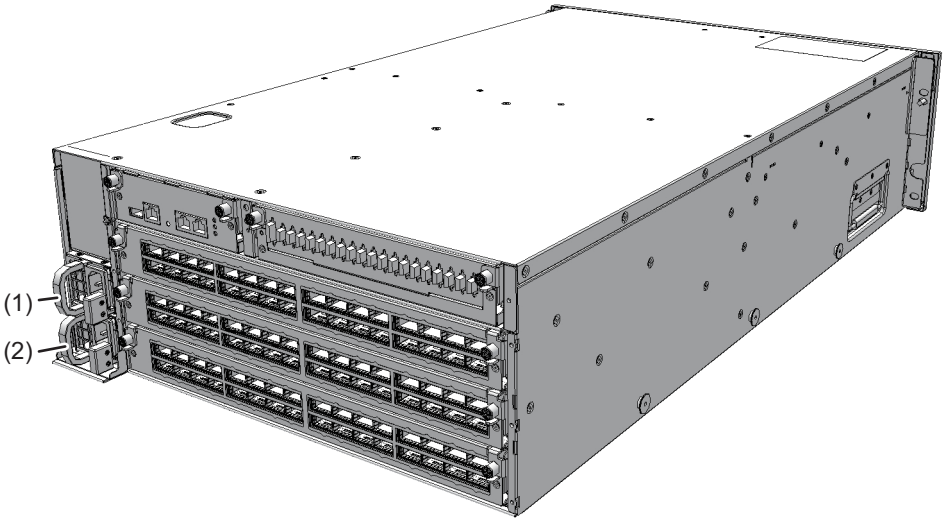
This chapter describes the procedure for maintaining the power supply units mounted in a crossbar box.

- Configuration of the Power Supply Units
- Before Maintaining a Power Supply Unit
- Enabling the Removal of a Power Supply Unit
- Removing a Power Supply Unit
- Installing a Power Supply Unit
- Restoring the System

18.1 Configuration of the Power Supply Units

This section describes the configuration and the locations of the power supply units. The power supply units can have the 1+1 redundant configuration. Active/hot maintenance can be performed.

Figure 18-1 Locations of power supply units



Location number	Component
1	Power supply unit (PSU#0)
2	Power supply unit (PSU#1)

18.2 Before Maintaining a Power Supply Unit

This section describes the types and flow of maintenance of the power supply units, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

18.2.1 Types of maintenance

Table 18-1 lists the types of maintenance for the power supply units. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 18-1 Types of maintenance for the power supply unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Supported (*1)	Unsupported (*2)	Supported	Unsupported (*2)	Supported (*3)

*1: Active/hot replacement can be performed only with a redundant configuration.
*2: If any physical partition is currently operating, the crossbar box cannot be powered off.
*3: All the physical partitions must be powered off, and the system must be completely shut down.

18.2.2 Maintenance flow

Table 18-2 lists the sequence of the maintenance procedure for the power supply units.

Table 18-2 Maintenance flow

Details of update process		Replacement
1	Preparation	18.3
2	Removing a power supply unit	18.4
3	Installing a power supply unit	18.5
4	Restoring the system	18.6

18.2.3 Precautions for replacement

Note the following points when replacing a power supply unit:

- There are two power supply units. Thus, the system can continue operating even if one of the units fails. Do not, however, operate the system for an extended period while one unit has failed.
- When replacing multiple power supply units, replace one unit at a time. If redundancy of the power supply unit cannot be assured, then system-stopped maintenance must be performed.
- Do not force push the power supply unit into its slot. If excessive force is applied, other components or the chassis may be damaged.

18.3 Enabling the Removal of a Power Supply Unit

This section describes the preparations that must be completed prior to the removal

of a power supply unit. The preparation procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Inactive/Hot maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

18.3.1 Active/Hot maintenance

Note - Active/hot maintenance is supported only for a redundant configuration.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Execute the replacefru command to release the power supply unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

6. **Remove the power cord from the power supply unit requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

18.3.2 Inactive/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring**

maintenance.

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the power supply unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove the power cord from the power supply unit requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

18.3.3 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the power supply unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the power supply unit of the crossbar box**

requiring maintenance.
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

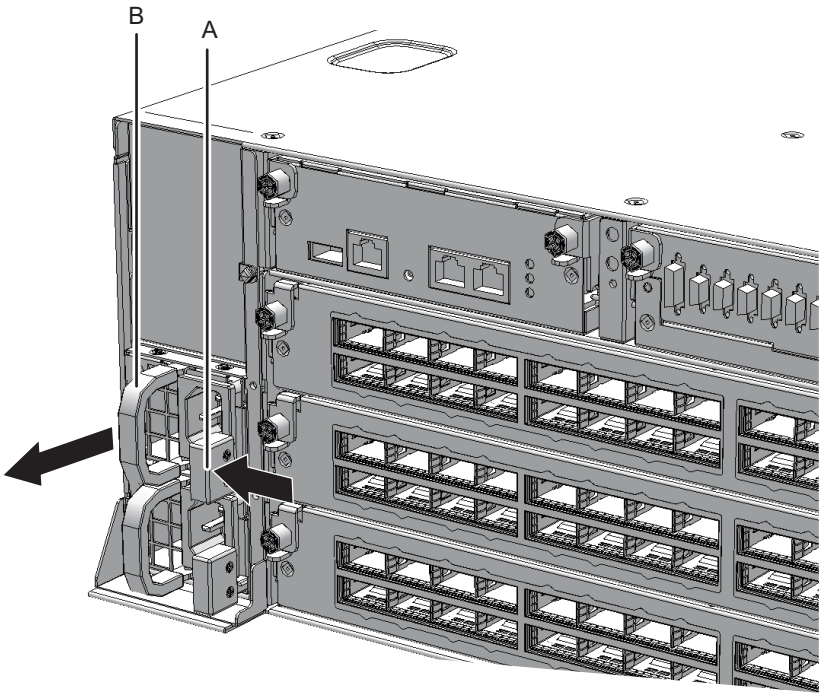
18.4 Removing a Power Supply Unit

This section describes the procedure for removing a power supply unit.
Enable the removal of the power supply unit before attempting to remove it. For details, see "18.3 Enabling the Removal of a Power Supply Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

1. **While pushing the lever (A in the figure) of the power supply unit, hold the handle (B in the figure) and pull out the power supply unit.**

Figure 18-2 Removing a power supply unit



2. **Support the power supply unit with one hand from below and carefully pull it out of the slot.**

Note - Place the removed power supply unit on the grounded ESD mat to ground any static electricity.

18.5 Installing a Power Supply Unit

This section describes the procedure for installing a power supply unit.

1. **Support the power supply unit from below with one hand and insert it carefully into its slot.**

Note - Do not forcibly push the power supply unit into its slot. Using excessive force may damage the component or the chassis.

---

2. **Push the power supply unit fully home.**

Note - Check that the power supply unit is fully inserted and that the lever is fixed.

18.6 Restoring the System

This section describes the procedure for restoring the system after installing a power supply unit. The restoration procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Inactive/Hot maintenance
- System-stopped maintenance

18.6.1 Active/Hot maintenance

1. **Connect the power cords to the power supply unit requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."
2. **Confirm that the LED (green) of the power supply unit is on.**
3. **Return to the operation of the XSCF firmware replacefru command to confirm that the power supply unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
4. **Execute the showstatus command to confirm that the power supply unit is operating normally after the completion of maintenance.**

```
XSCF> showstatus
```

5. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

6. **Close the rack door.**

18.6.2 Inactive/Hot maintenance

1. **Connect the power cords to the power supply unit requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."
2. **Confirm that the LED (green) of the power supply unit is on.**

3. **Return to the operation of the XSCF firmware replacefru command to confirm that the power supply unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
4. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
5. **Close the rack door.**

18.6.3 System-stopped maintenance

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the power supply unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

Chapter 19

Maintaining the Fan Units of the Crossbar Box

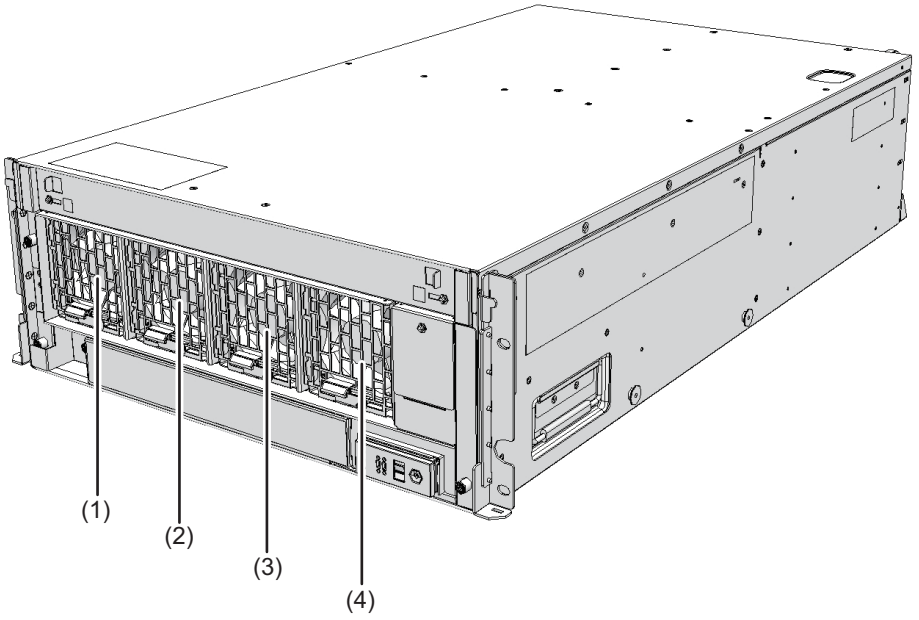
This chapter describes the procedure for maintaining the fan units mounted in a crossbar box.

- Configuration of the Fan Units
- Before Maintaining a Fan Unit
- Enabling the Removal of a Fan Unit
- Removing a Fan Unit
- Installing a Fan Unit
- Restoring the System

19.1 Configuration of the Fan Units

This section describes the configuration and the locations of the fan units.
Four fan units are mounted in each chassis.
If one of the cooling fans fails during system operation, the XSCF detects the error. However, the system can continue operating because the fans have a redundant configuration.

Figure 19-1 Location of fan units



Location number	Component
1	Fan unit (FANU#0)
2	Fan unit (FANU#1)
3	Fan unit (FANU#2)
4	Fan unit (FANU#3)

19.2 Before Maintaining a Fan Unit

This section describes the types and the flow of maintenance of the fan units, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

19.2.1 Types of maintenance

Table 19-1 lists the types of maintenance for the fan units. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 19-1 Types of maintenance for fan unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Supported	Unsupported (*1)	Supported	Unsupported (*1)	Supported (*2)

*1: If any physical partition is currently operating, the crossbar box cannot be powered off.
*2: All the physical partitions must be powered off, and the system must be completely shut down.

19.2.2 Maintenance flow

Table 19-2 lists the sequence of the maintenance procedure for the fan units.

Table 19-2 Maintenance flow

Details of update process		Replacement
1	Preparation	19.3
2	Removing a fan unit	19.4
3	Installing a fan unit	19.5
4	Restoring the system	19.6

19.2.3 Precautions for replacement

Note the following points when replacing a fan unit:

- When replacing multiple fan units, replace one unit at a time. If a redundant configuration cannot be assured, perform cold replacement.
- The cooling fans have a redundant configuration. Thus, the system can continue operating even if one of the fans in the fan units experiences a failure. Avoid operating the system with a faulty fan for an extended period and replace the fan unit containing the failed fan as soon as possible.

19.3 Enabling the Removal of a Fan Unit

This section describes the preparations that must be completed prior to removing a

fan unit. The preparation procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Inactive/Hot maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

19.3.1 Active/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Execute the replacefru command to release the fan unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

19.3.2 Inactive/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the fan unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

19.3.3 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the fan unit requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

19.4 Removing a Fan Unit

This section describes the procedure for removing a fan unit.
Enable the removal of the fan unit before attempting to remove it. For details, see "19.3 Enabling the Removal of a Fan Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

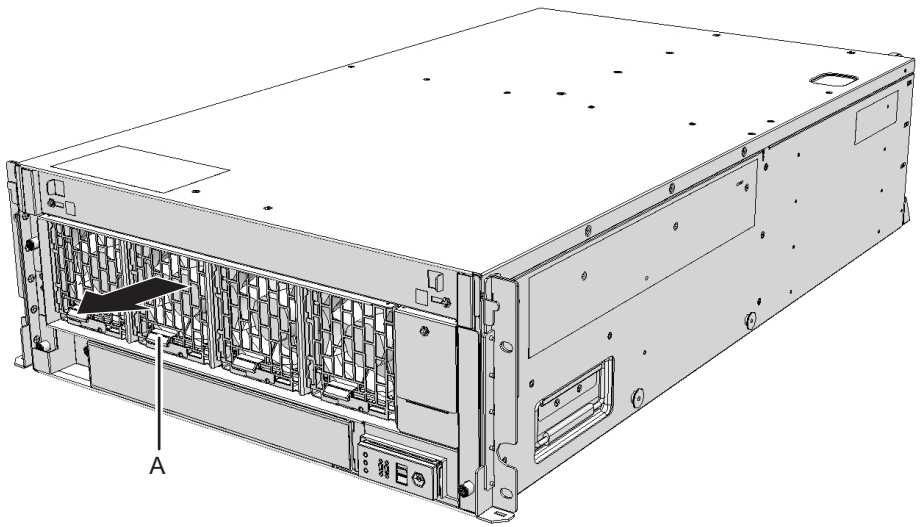
19.4.1 Accessing a fan unit

1. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."

19.4.2 Removing a fan unit

1. **Pull out the fan unit while raising the lever (A in the figure) of the fan unit.**

Figure 19-2 Lever of fan unit



2. **Carefully remove the fan unit from its slot.**

Note - Place the removed fan unit on a grounded antistatic ESD mat.

19.5 Installing a Fan Unit

This section describes the procedure for installing a fan unit.

19.5.1 Installing a fan unit

1. **Carefully insert the fan unit into its slot.**

Note - Do not force the fan unit into the slot. Using excessive force may damage the component or the chassis.

2. **Push the fan unit fully home.**

Note - Check that the fan unit is fully inserted and secured.

19.5.2 Restoring the chassis

1. **Install the front cover.**
   For details, see "6.5.3 Installing the front cover."

19.6 Restoring the System

This section describes the procedure for restoring the system after installing a fan unit. The restoration procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Inactive/Hot maintenance
- System-stopped maintenance

19.6.1 Active/Hot maintenance

1. **Return to the operation of the XSCF firmware replacefru command to confirm that the fan unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
2. **Execute the showstatus command to confirm that there is no problem with the fan unit after the completion of maintenance.**

```
XSCF> showstatus
```

3. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

4. **Close the rack door.**

19.6.2 Inactive/Hot maintenance

1. **Return to the operation of the XSCF firmware replacefru command to confirm that the fan unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
2. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
3. **Close the rack door.**

19.6.3 System-stopped maintenance

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the fan unit has been incorporated into the system.**

For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

Chapter 20

Maintaining the XSCF Interface Unit of the Crossbar Box

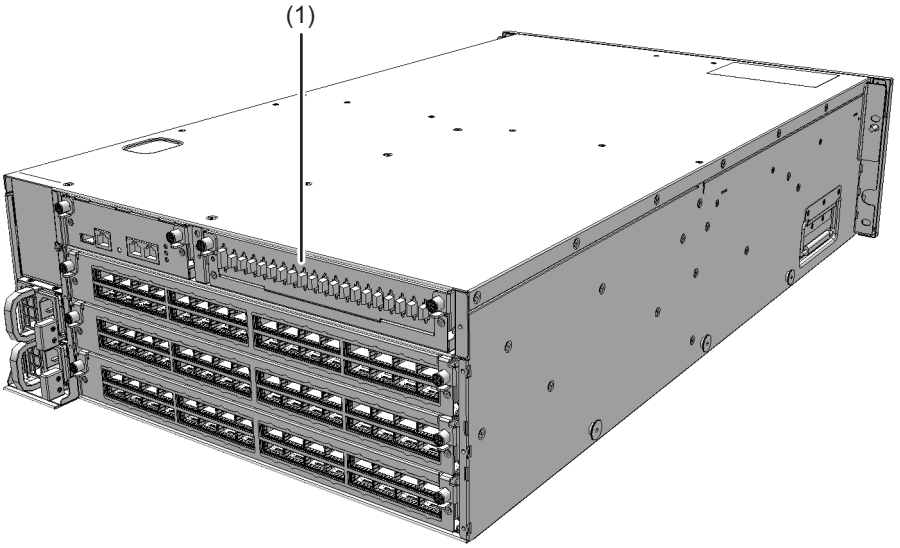
This chapter describes the procedure for maintaining the XSCF interface unit mounted in a crossbar box.

- Location of the XSCF Interface Unit
- Before Maintaining the XSCF Interface Unit
- Enabling the Removal of the XSCF Interface Unit
- Removing the XSCF Interface Unit
- Installing the XSCF Interface Unit
- Restoring the System

20.1 Location of the XSCF Interface Unit

This section describes the location of the XSCF interface unit.

Figure 20-1 Location of XSCF interface unit



Location number	Component
1	XSCF interface unit (XSCFIFU)

20.2 Before Maintaining the XSCF Interface Unit

This section describes the types and the flow of maintenance of the XSCF interface unit.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

20.2.1 Types of maintenance

Table 20-1 lists the types of maintenance for the XSCF interface unit. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 20-1 Type of maintenance for XSCF interface unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Unsupported	Unsupported (*1)	Unsupported	Unsupported (*1)	Supported (*2)

*1: If any physical partition is currently operating, the crossbar box cannot be powered off.
*2: All the physical partitions must be powered off, and the system must be completely shut down.

20.2.2 Maintenance flow

Table 20-2 lists the sequence of the maintenance procedure for the XSCF interface unit.

Table 20-2 Maintenance flow

Details of update process		Replacement
1	Preparation	20.3
2	Removing an XSCF interface unit	20.4
3	Installing an XSCF interface unit	20.5
4	Restoring the system	20.6

20.3 Enabling the Removal of the XSCF Interface Unit

This section describes the preparations that must be completed prior to removing the XSCF interface unit.

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

20.4 Removing the XSCF Interface Unit

This section describes the procedure for removing an XSCF interface unit.
Enable the removal of the XSCF interface unit before attempting to remove it. For details, see "20.3 Enabling the Removal of the XSCF Interface Unit."

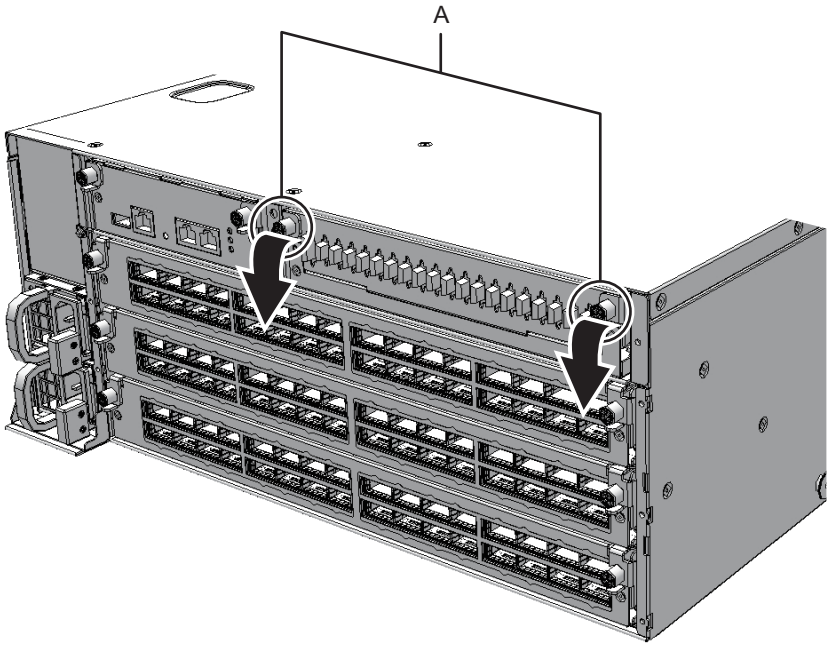
Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

1. **Remove all the XSCF BB control cables and XSCF DUAL control cables connected to the XSCF interface unit.**

Note - Record the positions of the cables before removing them to ensure that they are reinstalled correctly.

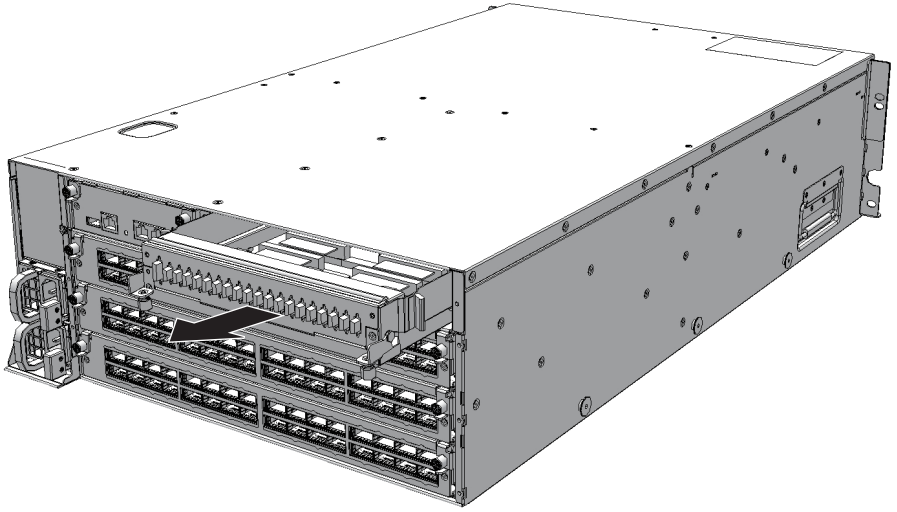
2. **Loosen the two screws (A in the figure) of the XSCF interface unit and lower the right and left levers to release the XSCF interface unit.**

Figure 20-2 Positions of screws and levers



3. **Hold the levers and partially pull out the XSCF interface unit.**

Figure 20-3 Pulling out the XSCF interface unit



4. **Support the XSCF interface unit from below with one hand and then carefully remove it from the chassis.**

Note - Place the removed XSCF interface unit on a grounded antistatic ESD mat.

20.5 Installing the XSCF Interface Unit

This section describes the procedure for installing the XSCF interface unit.

Note - When mounting an XSCF interface unit, check the connectors on both of the chassis and XSCF interface unit beforehand to confirm that no pin is bent and all the pins are neatly arranged in lines. If an XSCF interface unit is mounted with a bent pin in a connector, the chassis or XSCF interface unit may be damaged. Also, carefully proceed with the work to prevent any pin from being bent.

1. **Support the XSCF interface unit from below with one hand and then carefully insert it into the chassis.**
2. **Raise the right and left levers and tighten the two screws.**
3. **Connect all the cables to the XSCF interface unit.**

Note - Reinstall the cables in their original positions by referring to the notes that you made before the start of maintenance.
Note - Ensure that the cables are firmly connected and secured.

20.6 Restoring the System

This section describes the procedure for restoring the system after installing an XSCF interface unit.

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
3. **Close the rack door.**

Chapter 21

Maintaining the Crossbar Backplane Unit of the Crossbar Box

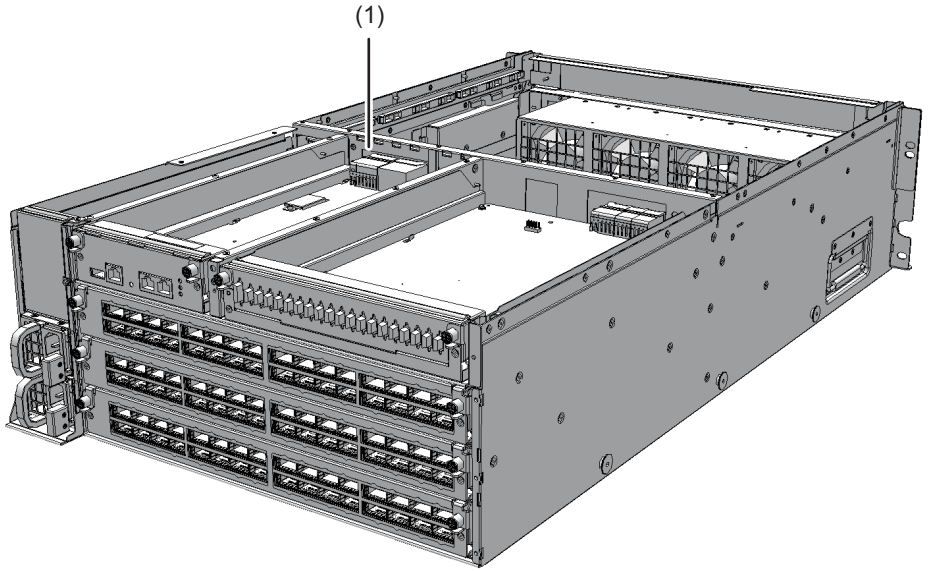
This chapter describes the procedure for maintaining the crossbar backplane unit mounted in a crossbar box.

- Location of the Crossbar Backplane Unit
- Before Maintaining the Crossbar Backplane Unit
- Enabling the Removal of the Crossbar Backplane Unit
- Removing the Crossbar Backplane Unit
- Installing the Crossbar Backplane Unit
- Restoring the System

21.1 Location of the Crossbar Backplane Unit

This section describes the location of the crossbar backplane unit.

Figure 21-1 Location of crossbar backplane unit



Location number	Component
1	Crossbar backplane unit (XBBPU)

21.2 Before Maintaining the Crossbar Backplane Unit

This section describes the types and the flow of maintenance of the crossbar backplane unit.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

21.2.1 Types of maintenance

Table 21-1 lists the types of maintenance for the crossbar backplane unit. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 21-1 Types of maintenance for crossbar backplane unit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Unsupported	Unsupported (*1)	Unsupported	Unsupported (*1)	Supported (*2)

*1: If any physical partition is currently operating, the crossbar box cannot be powered off.
*2: All the physical partitions must be powered off, and the system must be completely shut down.

21.2.2 Maintenance flow

Table 21-2 lists the sequence of the maintenance procedure for the crossbar backplane unit.

Table 21-2 Maintenance flow

Details of update process		Replacement
1	Preparation	21.3
2	Removing the crossbar backplane unit	21.4
3	Installing the crossbar backplane unit	21.5
4	Restoring the system	21.6

21.3 Enabling the Removal of the Crossbar Backplane Unit

This section describes the preparations that must be completed prior to removing the crossbar backplane unit.

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the crossbar backplane unit requiring maintenance from the system.**

```
XSCF> replacefru
```

   For details, see "5.1 Releasing an FRU from the System with the replacefru Command."
7. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

21.4 Removing the Crossbar Backplane Unit

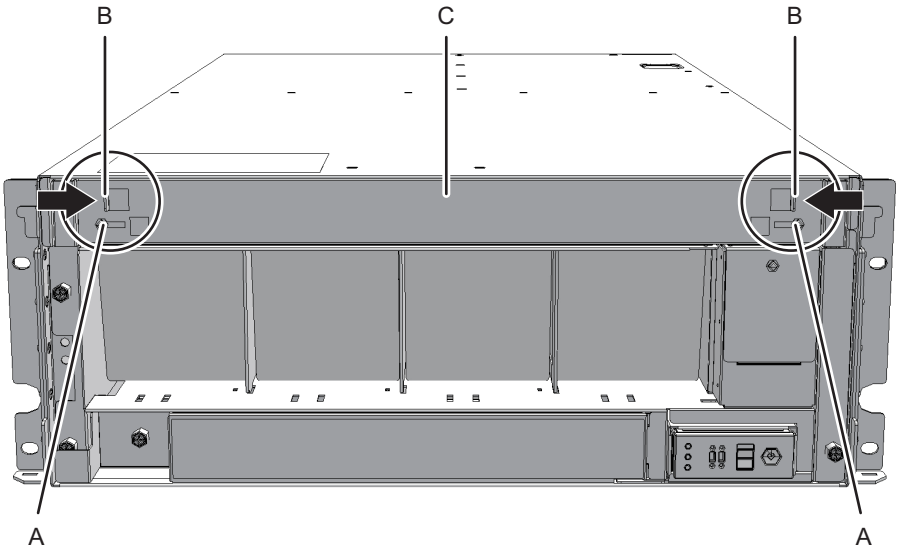
This section describes the procedure for removing the crossbar backplane unit. Enable the removal of the crossbar backplane unit before attempting to remove it. For details, see "21.3 Enabling the Removal of the Crossbar Backplane Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

1. **Partially pull out the following components, in order, from top to bottom.**
   You do not have to remove the cables of these components.
   - XSCF unit
     For details, see "17.4 Removing the XSCF Unit."
   - XSCF interface unit
     For details, see "20.4 Removing the XSCF Interface Unit."
   - Crossbar unit or crossbar filler unit
     For details, see "16.4 Removing a Crossbar Unit."
   - Power supply unit
     For details, see "18.4 Removing a Power Supply Unit."

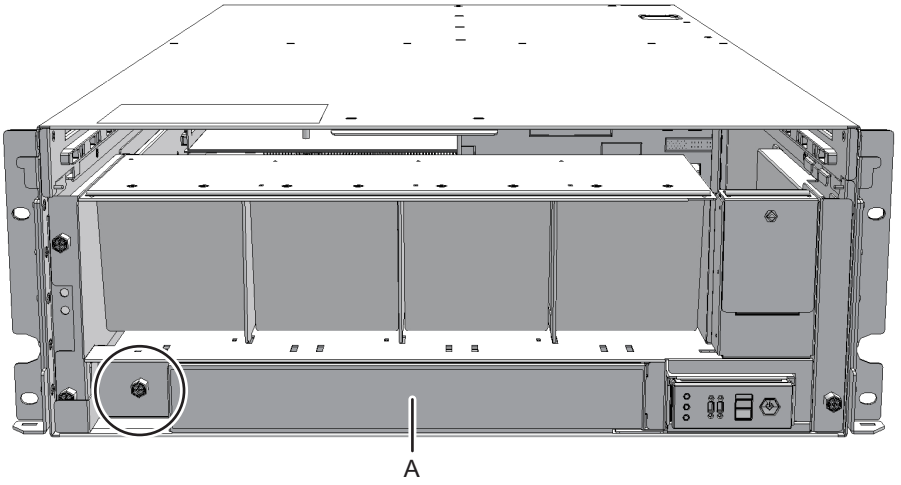
2. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."
3. **Remove all the fan units.**
   For details, see "19.4 Removing a Fan Unit."
4. **Loosen the two screws (A in the figure) securing the upper cover and slide the right and left stoppers (B in the figure) inwards. Then, remove the upper cover (C in the figure).**

Figure 21-2 Removing the upper cover



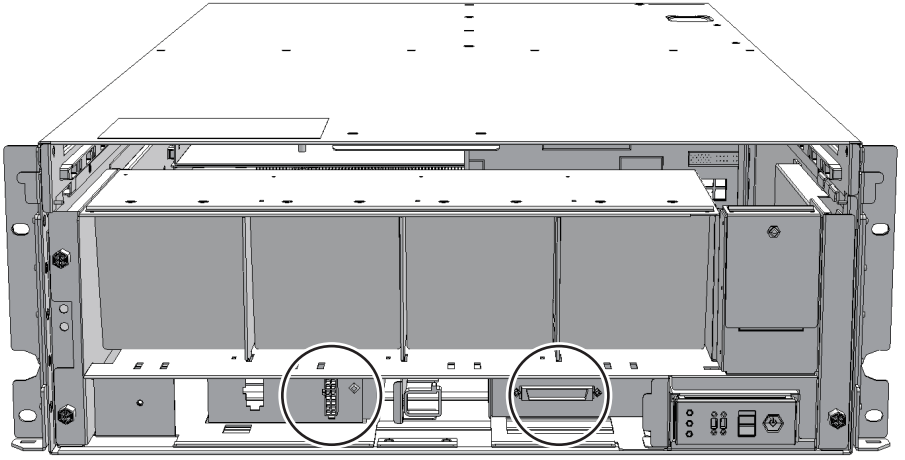
5. **Loosen the one screw (A in the figure) securing the lower cover and then slide the lower cover to the left to remove it.**

Figure 21-3 Removing the lower cover



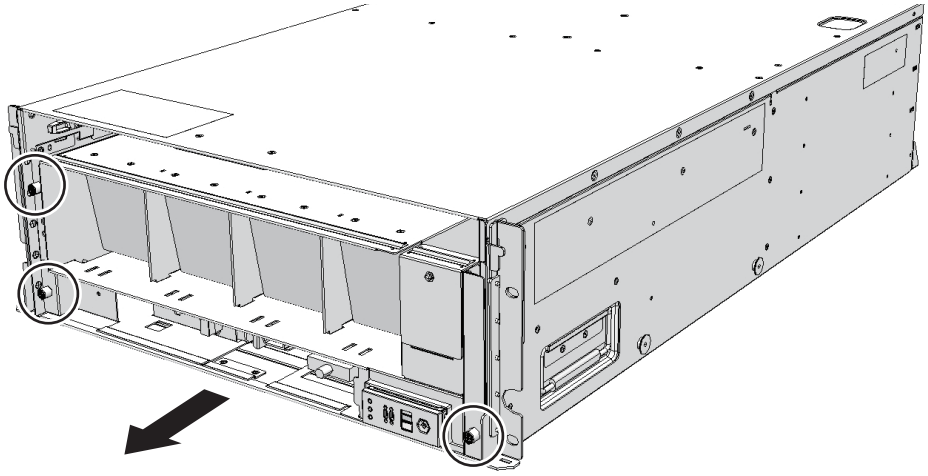
6. **Disconnect the two cables from the fan shelf.**
   Arrange the removed cables in the center.

Figure 21-4 Removing the cables



7. **Loosen the three screws securing the fan shelf and partially pull out the fan shelf.**

Figure 21-5 Removing the fan shelf



8. **Place a hand under the fan shelf to support it and then carefully remove it from the chassis.**

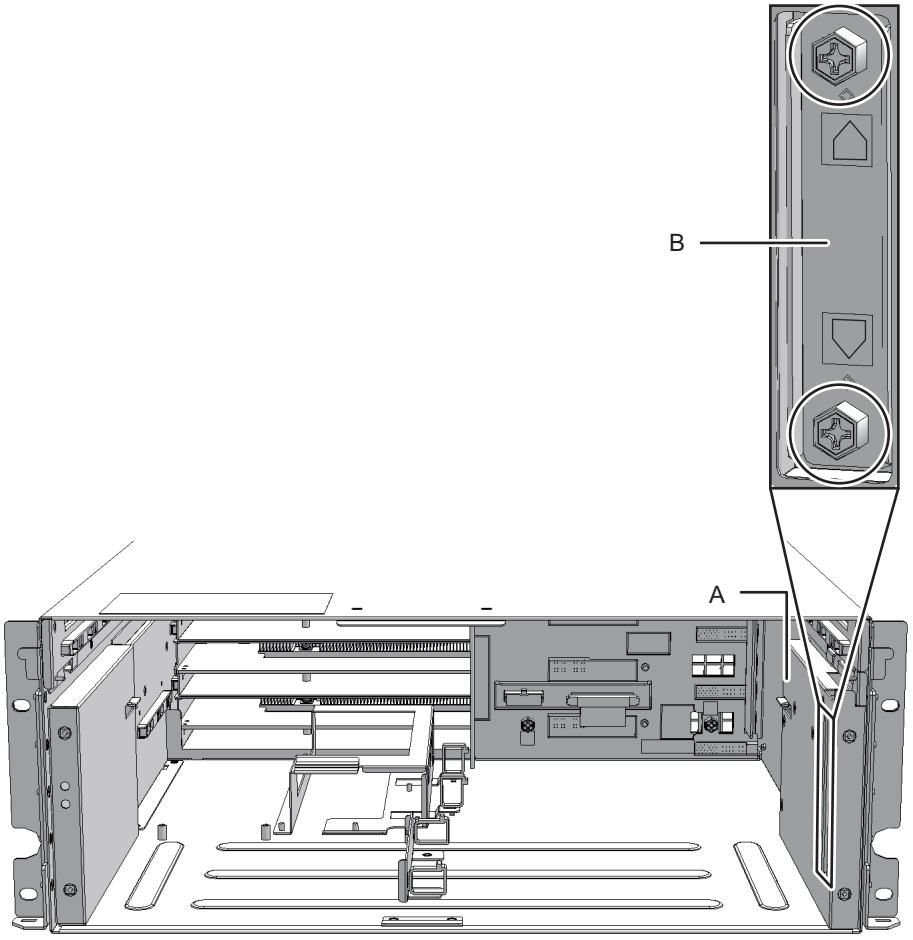
Note - Remove the fan shelf while paying careful attention to the two cables arranged in the center.

Note - Place the removed fan shelf on a grounded antistatic ESD mat.

---

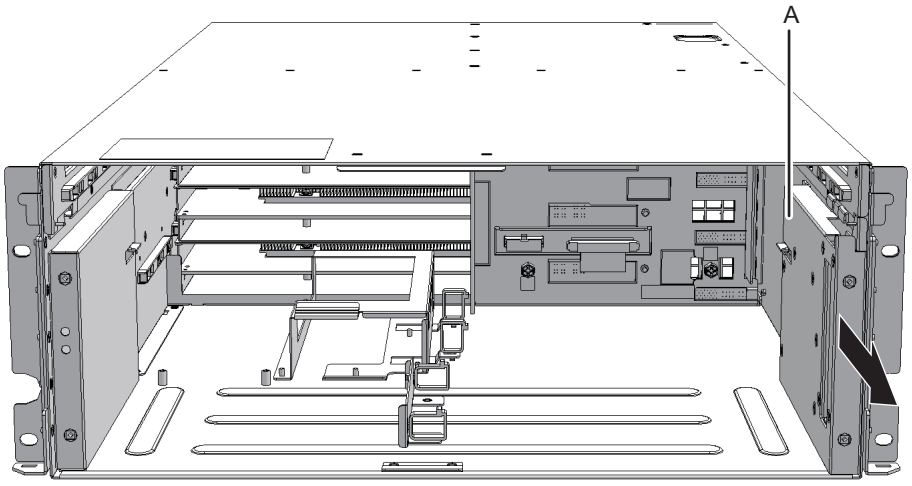
9. **Loosen the two screws and remove the bracket (B in the figure) fixing the guide plate (A in the figure).**

Figure 21-6 Removing the bracket



10. **Slide the guide plate (A in the figure) to the front to remove it.**

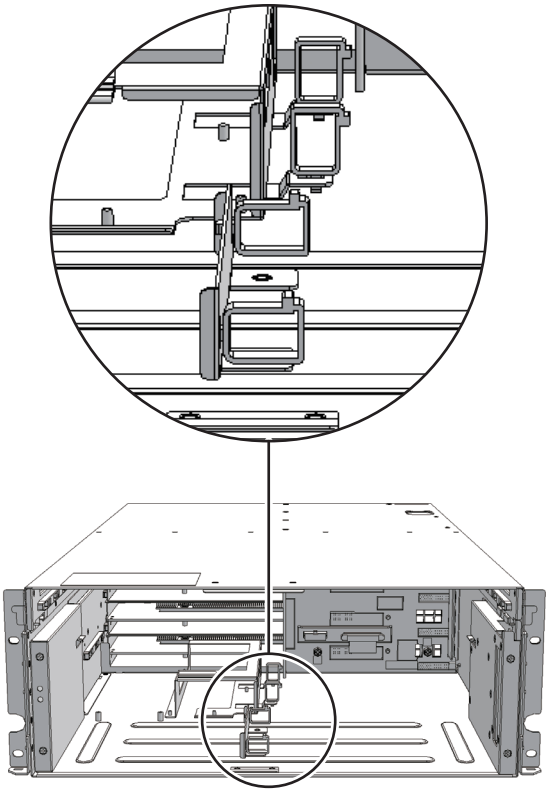
Figure 21-7 Removing guide plate



11. **Remove the cable from the clamps.**

Note - Move the clamps back to their original positions so that they do not foul the removal of the crossbar backplane unit.

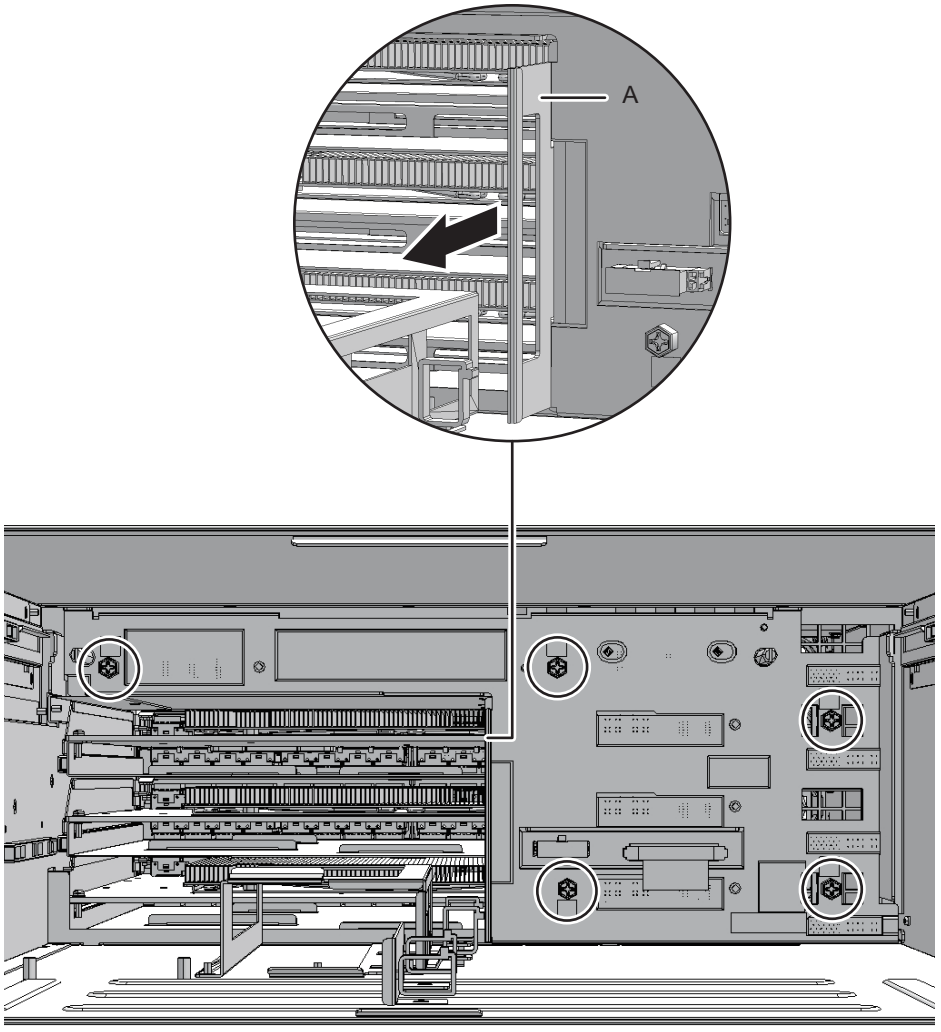
Figure 21-8 Removing the cables



12. **Loosen the five screws securing the crossbar backplane unit and then pull the crossbar backplane unit straight out by holding the center handle (A in the figure).**

Note - Remove the unit carefully so as to not damage any cables.
Note - Place the removed crossbar backplane unit on a grounded antistatic ESD mat.

Figure 21-9 Removing the crossbar backplane unit



21.5 Installing the Crossbar Backplane Unit

This section describes the procedure for installing the crossbar backplane unit.

1. **Insert the crossbar backplane unit into the chassis and then tighten the five screws.**
2. **Fix the cables of the crossbar backplane unit with the clamps.**
3. **Install the guide plate by sliding it towards the rear and then tighten the two screws.**

Check the guide plate latch to ensure that the plate is securely installed.

4. **Support the fan shelf from below with one hand and then insert it carefully into the chassis.**
   Arranging the cables in the center makes it easier to install the fan shelf.
5. **Tighten the three screws securing the fan shelf.**
6. **Connect the two cables to the fan shelf.**
7. **Install the lower cover and then secure it with the one screw.**
8. **Install the upper cover.**
9. **Slide the right and left stoppers of the upper cover outwards and then secure the cover with the two screws.**
10. **Install all the fan units.**
    For details, see "19.5 Installing a Fan Unit."
11. **Install the front cover.**
    For details, see "6.5.3 Installing the front cover."
12. **Reinstall the following components in their original positions in the order shown.**
    - Power supply unit
      For details, see "18.5 Installing a Power Supply Unit."
    - Crossbar unit or crossbar filler unit
      For details, see "16.5 Installing a Crossbar Unit."
    - XSCF interface unit
      For details, see "20.5 Installing the XSCF Interface Unit."
    - XSCF unit
      For details, see "17.5 Installing the XSCF Unit."

21.6 Restoring the System

This section describes the procedure for restoring the system after installing a crossbar backplane unit.

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the crossbar backplane unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   - **When the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the incorporated physical partition is powered off:**

     The example below specifies the following:
     00: The BB-ID of the chassis to start the diagnosis
     01: The BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify more than one of these.)
     To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

   - **When the system board of the chassis connected with the crossbar cables is incorporated into the physical partition, and the physical partition is powered on:**

     The example below specifies the following:
     00: The BB-ID of the chassis to start the diagnosis
     02: The PPAR-ID of the destination where the chassis to start the diagnosis is connected (You can specify only one of these.)

```
XSCF> diagxbu -y -b 00 -p 02
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

5. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."

6. **Close the rack door.**

Chapter 22

Maintaining the Fan Backplane of the Crossbar Box

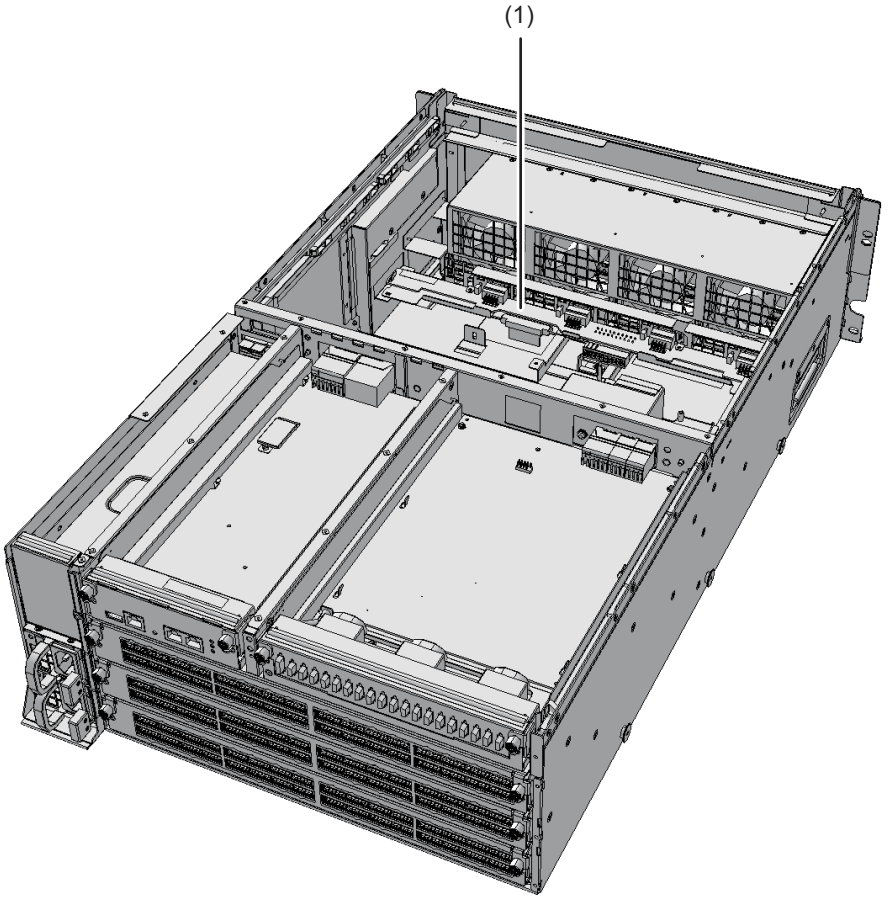
This chapter describes the procedure for maintaining the fan backplane mounted in the crossbar box.

- Configuration of the Fan Backplane
- Before Maintaining the Fan Backplane
- Enabling the Removal of the Fan Backplane
- Removing the Fan Backplane
- Installing the Fan Backplane
- Restoring the System

22.1 Configuration of the Fan Backplane

This section describes the configuration and the location of the fan backplane. The fan units are interconnected through the fan backplane.

Figure 22-1 Location of fan backplane



Location number	Component
1	Fan backplane (FANBP)

22.2 Before Maintaining the Fan Backplane

This section describes the types and the flow of maintenance of the fan backplane.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

22.2.1 Types of maintenance

Table 22-1 lists the types of maintenance for the fan backplane. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 22-1 Types of maintenance for fan backplane

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Unsupported	Unsupported (*1)	Unsupported	Unsupported (*1)	Supported (*2)

*1: If any physical partition is currently operating, the crossbar box cannot be powered off.
*2: All of the physical partitions must be stopped, and the system must be completely shut down.

22.2.2 Maintenance flow

Table 22-2 lists the sequence of the maintenance procedure for the fan backplane.

Table 22-2 Maintenance flow

Details of update process		Replacement
1	Preparation	22.3
2	Removing the fan backplane	22.4
3	Installing the fan backplane	22.5
4	Restoring the system	22.6

22.3 Enabling the Removal of the Fan Backplane

This section describes the preparations that must be completed prior to removing the fan backplane.

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring**

maintenance.

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the fan backplane requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

22.4 Removing the Fan Backplane

This section describes the procedure for removing the fan backplane.
Enable the removal of the fan backplane before attempting to remove it. For details, see "22.3 Enabling the Removal of the Fan Backplane."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

22.4.1 Accessing the fan backplane

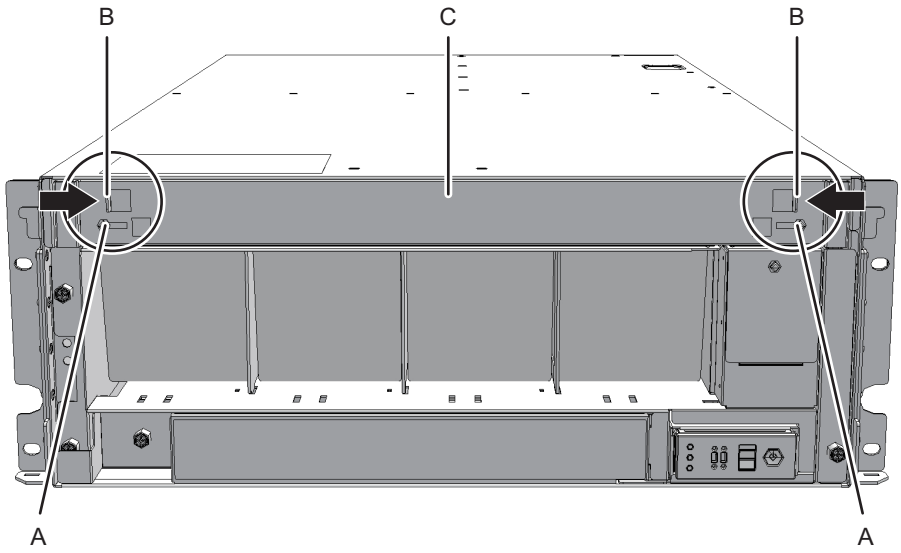
1. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."

2. **Remove all the fan units.**
   For details, see "19.4 Removing a Fan Unit."

22.4.2 Removing the fan backplane

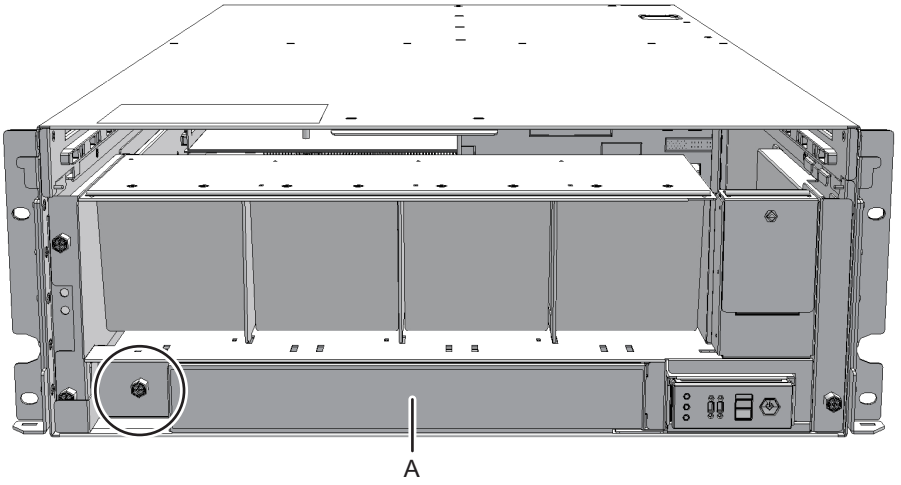
1. **Loosen the two screws (A in the figure) securing the upper cover and then slide the right and left stoppers (B in the figure) inwards. Then, remove the upper cover (C in the figure).**

Figure 22-2 Removing the upper cover



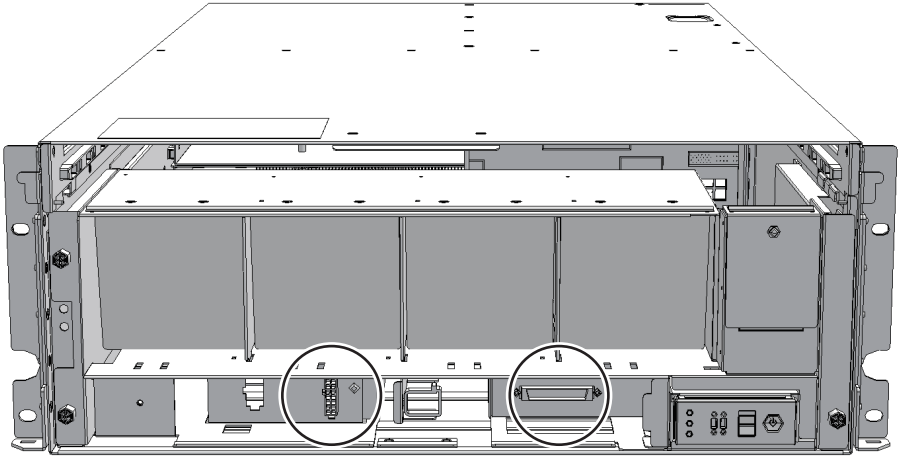
2. **Loosen the one screw (A in the figure) securing the lower cover and then slide the lower cover to the left to remove it.**

Figure 22-3 Removing the lower cover



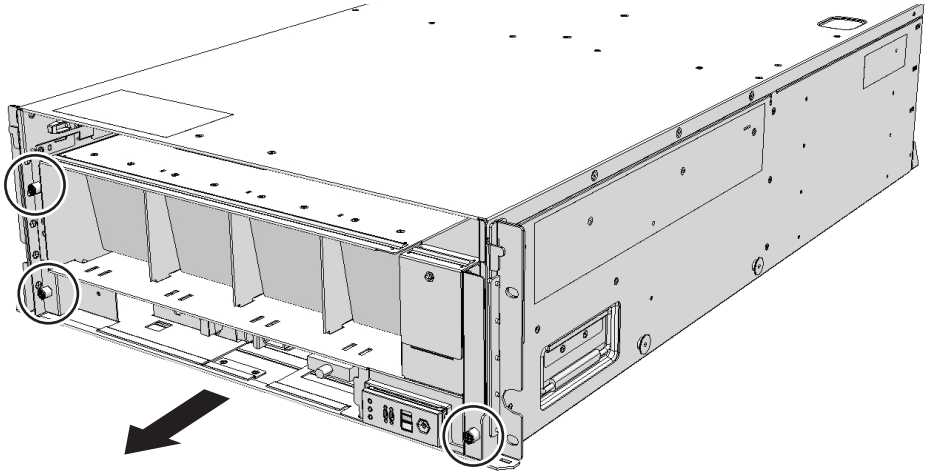
3. **Disconnect the two cables from the fan shelf.**
   Arrange the removed cables in the center.

Figure 22-4 Removing the cables



4. **Loosen the three screws securing the fan shelf and partially pull out the fan shelf.**

Figure 22-5 Removing the fan shelf



5. **Place a hand under the fan shelf to support it and then carefully remove it from the chassis.**

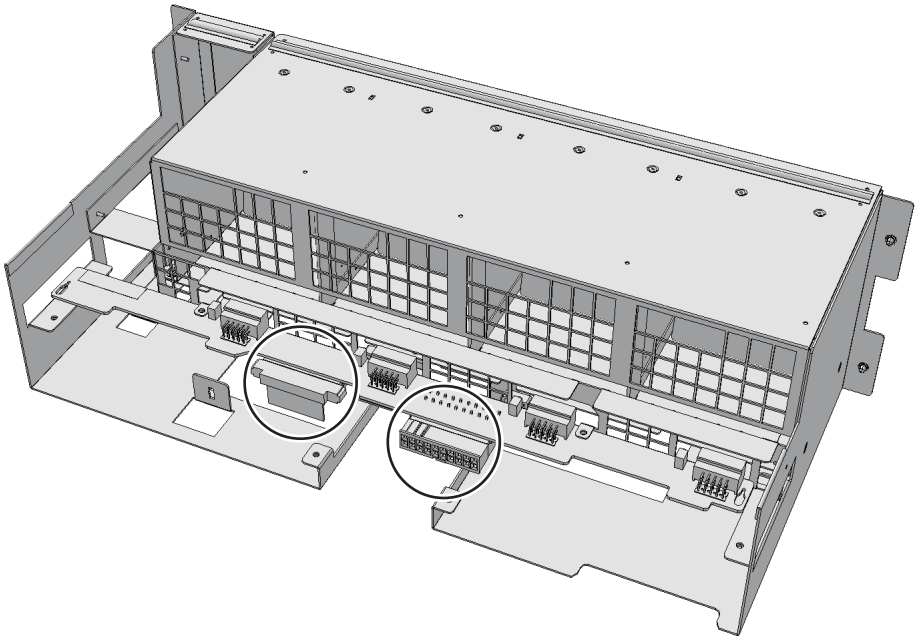
Note - Remove the fan shelf while paying careful attention to the two cables arranged in the center.

Note - Place the removed fan shelf on a grounded antistatic ESD mat.

---

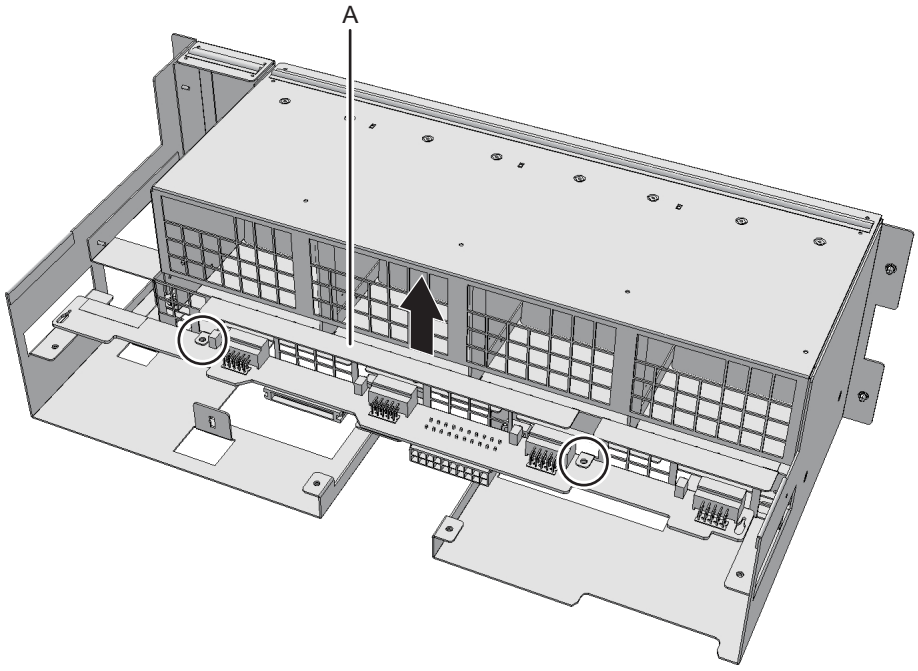
6. **Disconnect the two cables from the fan backplane.**

Figure 22-6 Removing the cables



7. **Remove the two screws securing the fan backplane to remove the bracket (A in the figure).**

Figure 22-7 Removing the screws and bracket



8. **Remove the fan backplane.**

Note - Place the removed fan backplane on a grounded antistatic ESD mat.

22.5 Installing the Fan Backplane

This section describes the procedure for installing the fan backplane.

22.5.1 Installing the fan backplane

1. **Fit the fan backplane into the right- and left-hand notches in the fan shelf.**
2. **Install the bracket of the fan backplane and secure it with two screws.**
3. **Connect the two cables to the fan backplane.**
4. **Support the fan shelf from below with one hand and then insert it carefully into the chassis.**
   Arranging the cables in the center makes it easier to install the fan shelf.
5. **Tighten the three screws securing the fan shelf.**

6. **Connect the two cables to the fan shelf.**
7. **Install the lower cover and then secure it with the one screw.**
8. **Install the upper cover.**
9. **Slide the right and left stoppers of the upper cover outwards and then secure the cover with the two screws.**

22.5.2 Restoring the chassis

1. **Install all the fan units.**
   For details, see "19.5.1 Installing a fan unit."
2. **Install the front cover.**
   For details, see "6.5.3 Installing the front cover."

22.6 Restoring the System

This section describes the procedure for restoring the system after installing the fan backplane.

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the fan backplane has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

Chapter 23

Maintaining the Operation Panel of the Crossbar Box

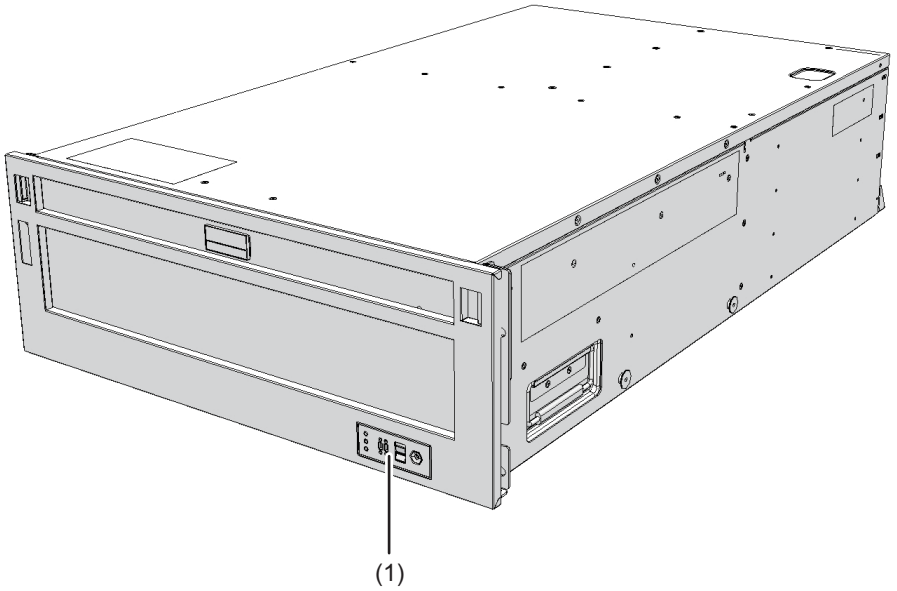
This chapter describes the procedure for maintaining the operation panel mounted on the crossbar box.

- Location of the Operation Panel
- Before Maintaining the Operation Panel
- Enabling the Removal of the Operation Panel
- Removing the Operation Panel
- Installing the Operation Panel
- Restoring the System

23.1 Location of the Operation Panel

This section describes the location of the operation panel.

Figure 23-1 Location of the operation panel



Location number	Component
1	Operation panel (OPNL)

23.2 Before Maintaining the Operation Panel

This section describes the types and flow of the maintenance of the operation panel, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

23.2.1 Types of maintenance

Table 23-1 lists the types of maintenance for the operation panel. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 23-1 Types of maintenance for operation panel

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Unsupported	Unsupported (*1)	Unsupported	Unsupported (*1)	Supported (*2)

*1: If any physical partition is currently operating, the crossbar box cannot be powered off.
*2: All the physical partitions must be powered off, and the system must be completely shut down.

23.2.2 Maintenance flow

Table 23-2 lists the sequence of the maintenance procedure for the operation panel.

Table 23-2 Maintenance flow

Details of update process		Replacement
1	Preparation	23.3
2	Removing the operation panel	23.4
3	Installing the operation panel	23.5
4	Restoring the system	23.6

23.2.3 Precautions for replacement

Note the following point when replacing the operation panel:

- If you replace the operation panel, set the BB-ID for the new operation panel to the same value as that prior to the start of maintenance.

23.3 Enabling the Removal of the Operation Panel

This section describes the preparations that must be completed prior to removing the operation panel.

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**

3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."

5. **Power off all the physical partitions.**
For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."

6. **Execute the replacefru command to release the operation panel requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

23.4 Removing the Operation Panel

This section describes the procedure for removing the operation panel.
Enable the removal of the operation panel before attempting to remove it. For details, see "23.3 Enabling the Removal of the Operation Panel."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

23.4.1 Accessing the operation panel

1. **Check the ID switch on the operation panel and record the BB-ID set for the**

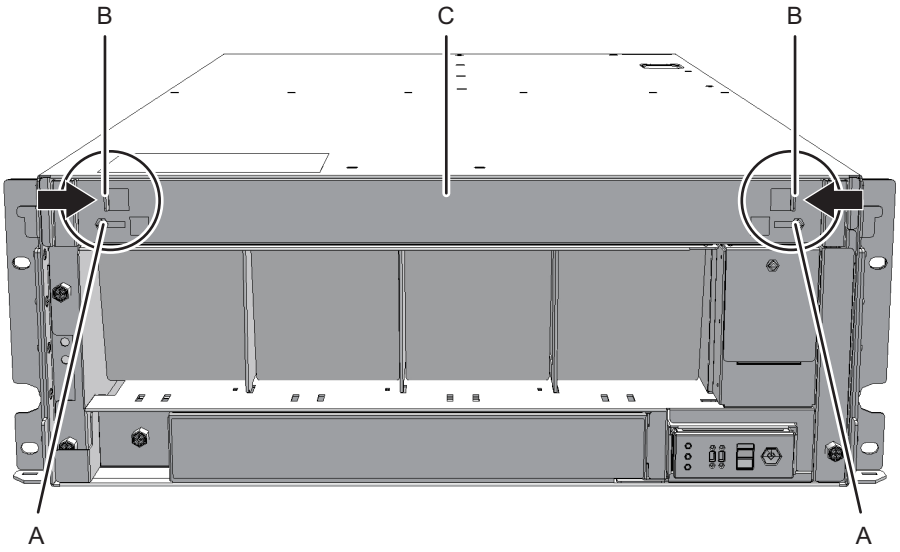
crossbar box requiring maintenance.

2. **Remove the front cover of the crossbar box.**
   For details, see "5.5.3 Removing the front cover."

3. **Remove all the fan units.**
   For details, see "19.4.2 Removing a fan unit."

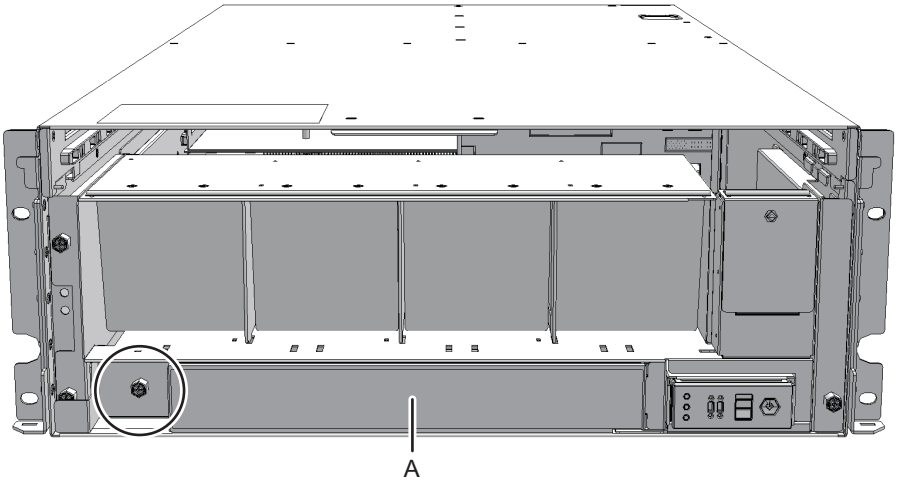
4. **Loosen the two screws (A in the figure) securing the upper cover and then slide the right and left stoppers (B in the figure) inwards. Then, remove the upper cover (C in the figure).**

Figure 23-2 Removing the upper cover



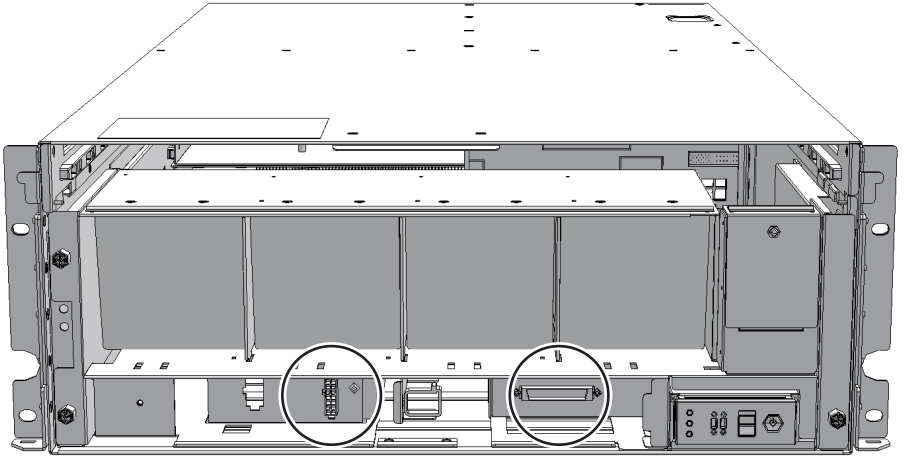
5. **Loosen the one screw (A in the figure) securing the lower cover and then slide the lower cover to the left to remove it.**

Figure 23-3 Removing the lower cover



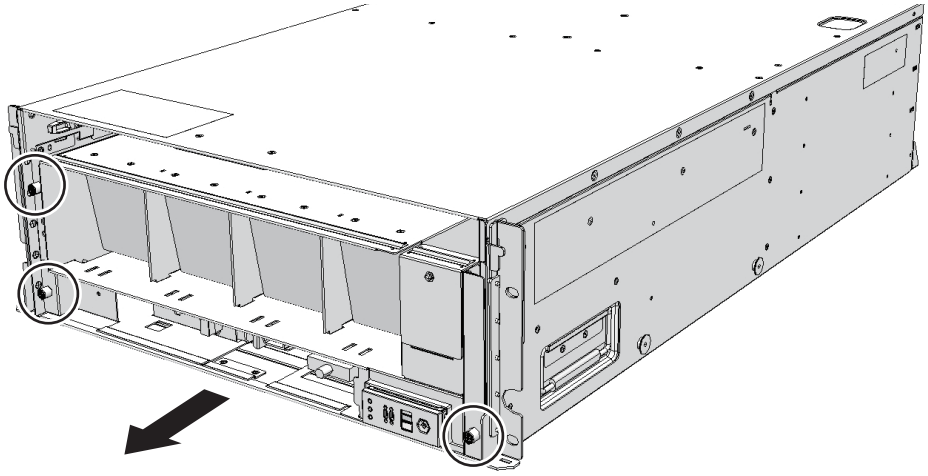
6. **Disconnect the two cables from the fan shelf.**
   Arrange the removed cables in the center.

Figure 23-4 Removing the cables



7. **Loosen the three screws securing the fan shelf and partially pull out the fan shelf.**

Figure 23-5 Removing the fan shelf



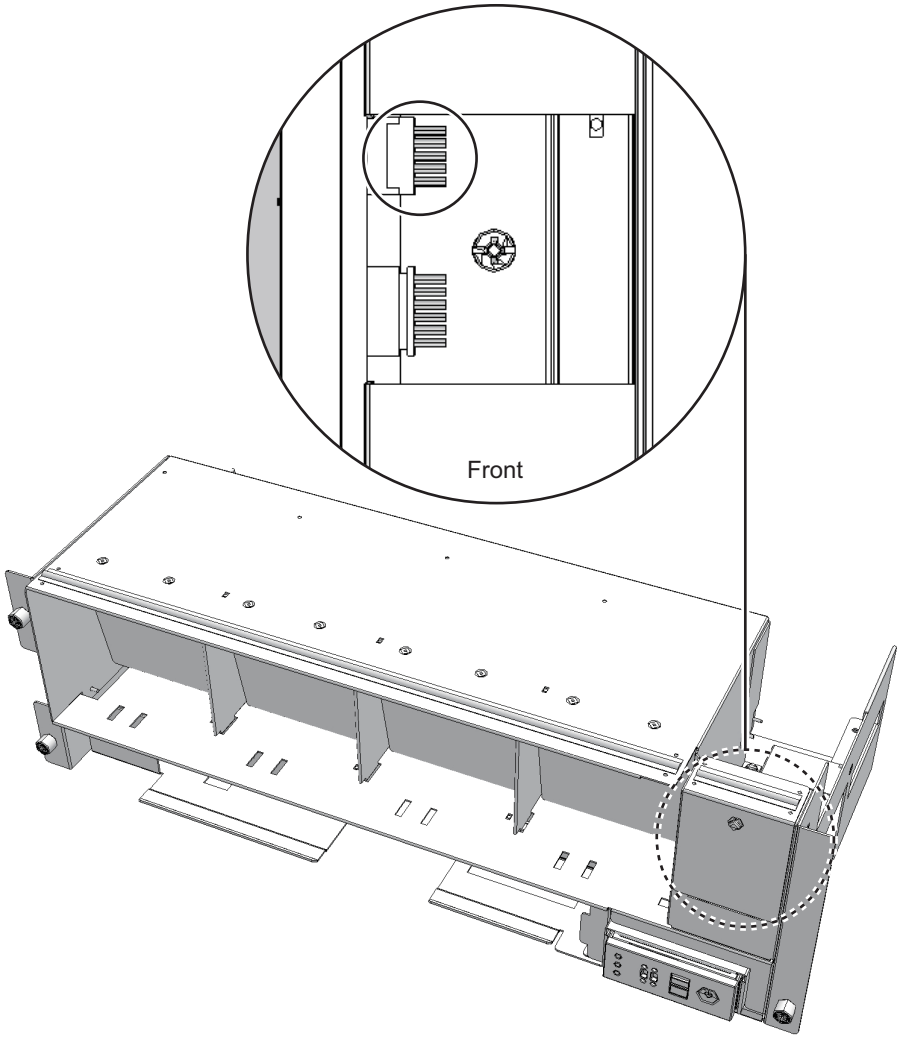
8. **Place a hand under the fan shelf to support it and then carefully remove it from the chassis.**

Note - Remove the fan shelf while paying careful attention to the two cables arranged in the center.
Note - Place the removed fan shelf on a grounded antistatic ESD mat.

23.4.2 Removing the operation panel

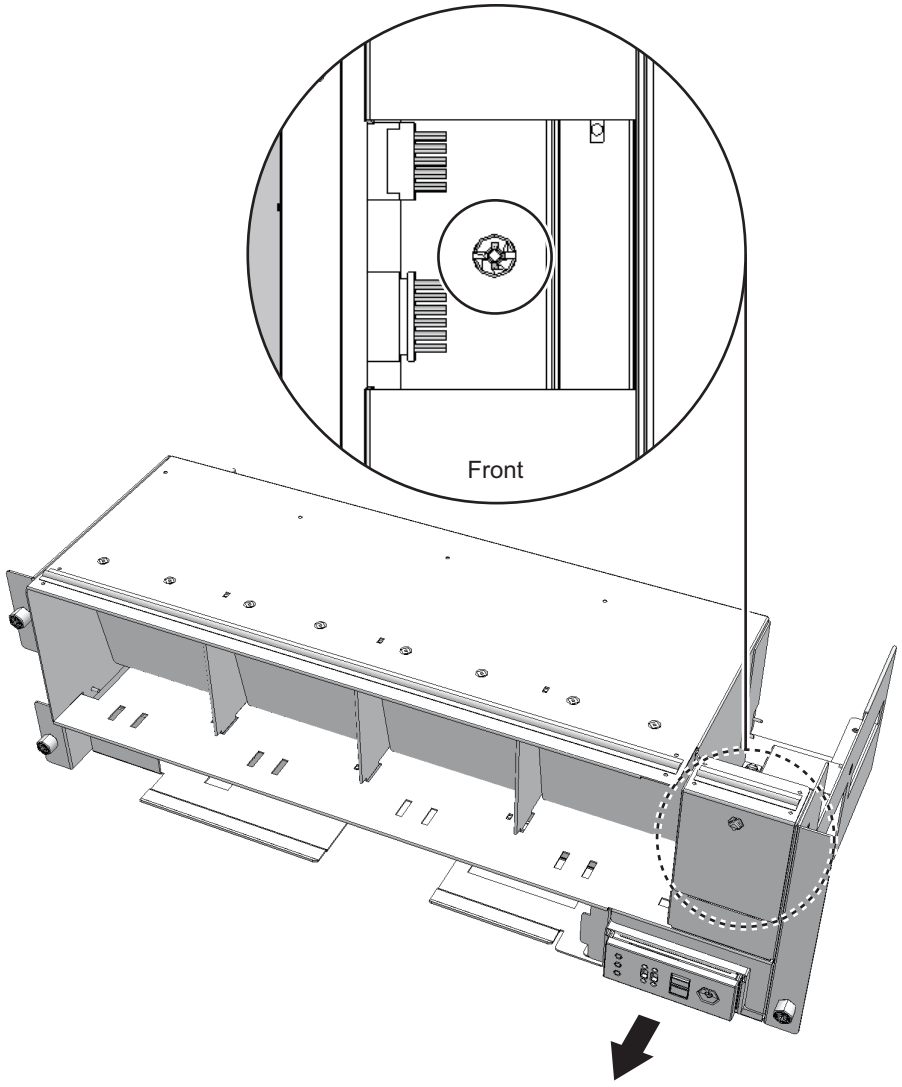
1. **Remove the cable connecting the fan shelf to the operation panel.**

Figure 23-6 Operation panel cable



2. **Loosen the one screw securing the operation panel and then remove it.**

Figure 23-7 Removing the operation panel



Note - Place the removed operation panel on a grounded antistatic ESD mat.

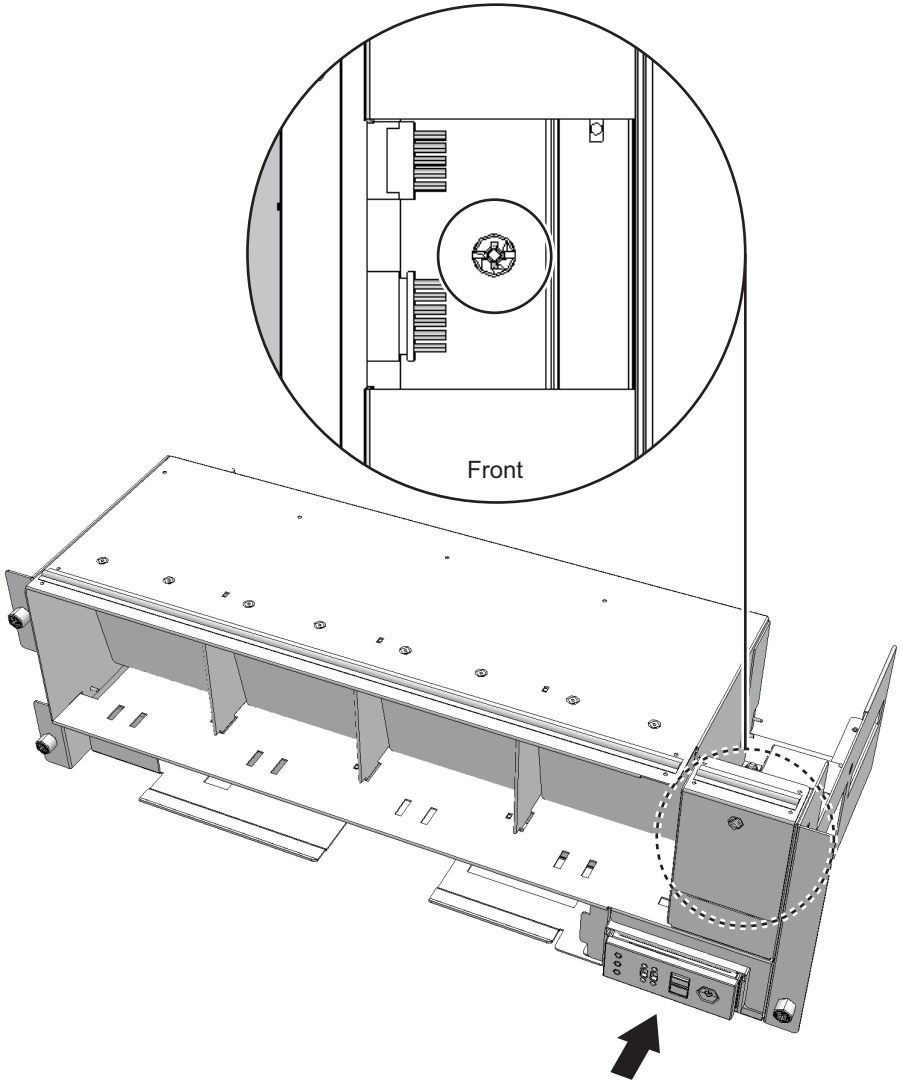
23.5 Installing the Operation Panel

This section describes the procedure for installing the operation panel.

23.5.1 Installing the operation panel

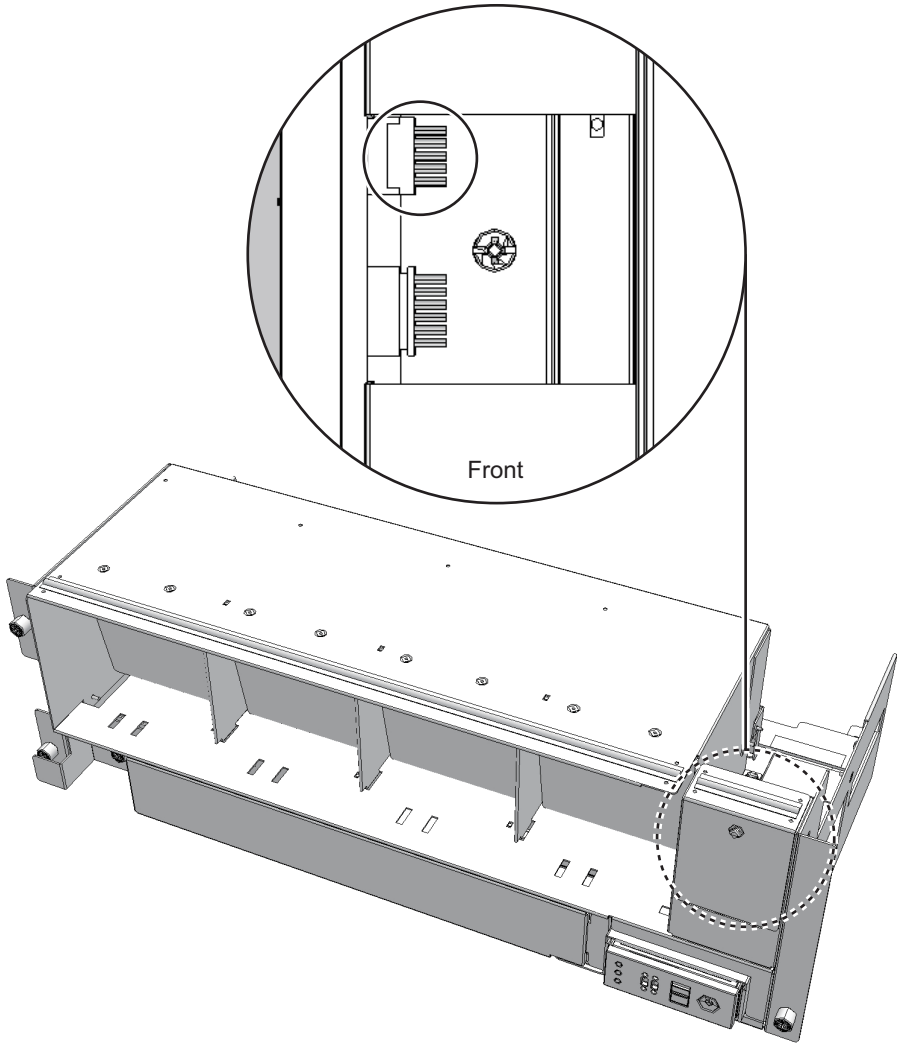
1. **Set the BB-ID of the operation panel to the value prior to the start of maintenance.**
2. **Insert the operation panel into the fan shelf and then secure it with the screw.**

Figure 23-8 Installing the operation panel



3. **Reinstall the cable between the fan shelf and the operation panel.**

Figure 23-9 Operation panel cable



23.5.2 Restoring the chassis

1. **Support the fan shelf from below with one hand and insert it into the chassis. Then, tighten the three screws.**
2. **Connect the two cables to the fan shelf.**
3. **Install the lower cover and then secure it with the one screw**.
4. **Install the upper cover and slide the right and left stoppers outwards. Then, tighten the two screws to secure the upper cover.**
5. **Install all the fan units.**

For details, see "19.5.1 Installing a fan unit."

6. **Install the front cover of the crossbar box.**
   For details, see "6.5.3 Installing the front cover."

23.6 Restoring the System

This section describes the procedure for restoring the system after installing the operation panel.

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the operation panel has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

Chapter 24

Maintaining the Crossbar Cables (Electrical)

This chapter describes the procedure for maintaining the crossbar cables (electrical).

- Configuration of the Ports for the Crossbar Cables (Electrical)
- Before Maintaining a Crossbar Cable (Electrical)
- Enabling the Removal of a Crossbar Cable (Electrical)
- Removing a Crossbar Cable (Electrical)
- Installing a Crossbar Cable (Electrical)
- Restoring the System

24.1 Configuration of the Ports for the Crossbar Cables (Electrical)

This section describes the configuration and the location of the ports that are used for connecting crossbar cables (electrical).
The crossbar cables (electrical) are used make interconnections between SPARC M10-4S systems.
Each crossbar cable (electrical) has a number that corresponds to a port number on the chassis. A port number is assigned to each pair of ports. Crossbar cables (electrical) should be replaced as a pair, therefore.

Figure 24-1 Connection ports for crossbar cables (electrical)

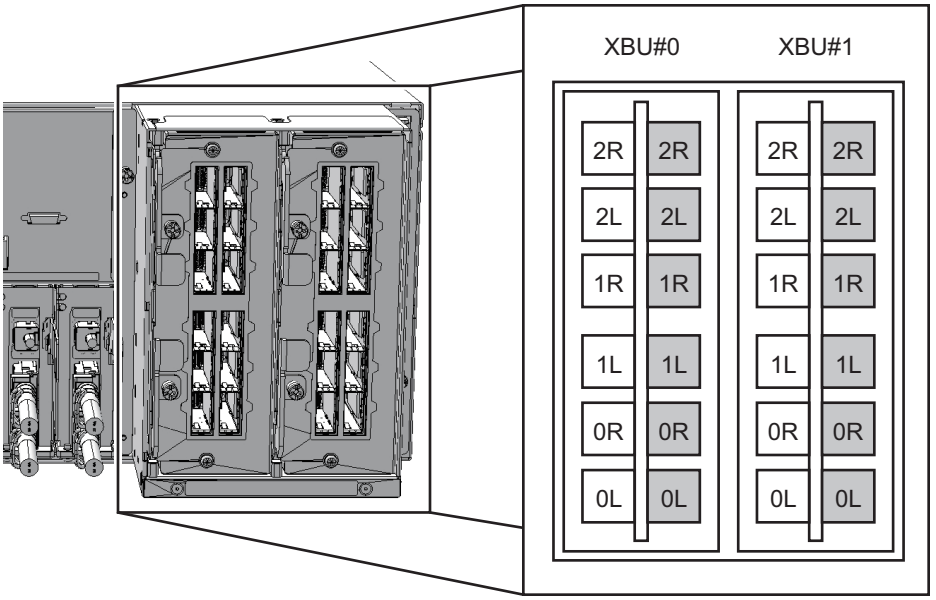
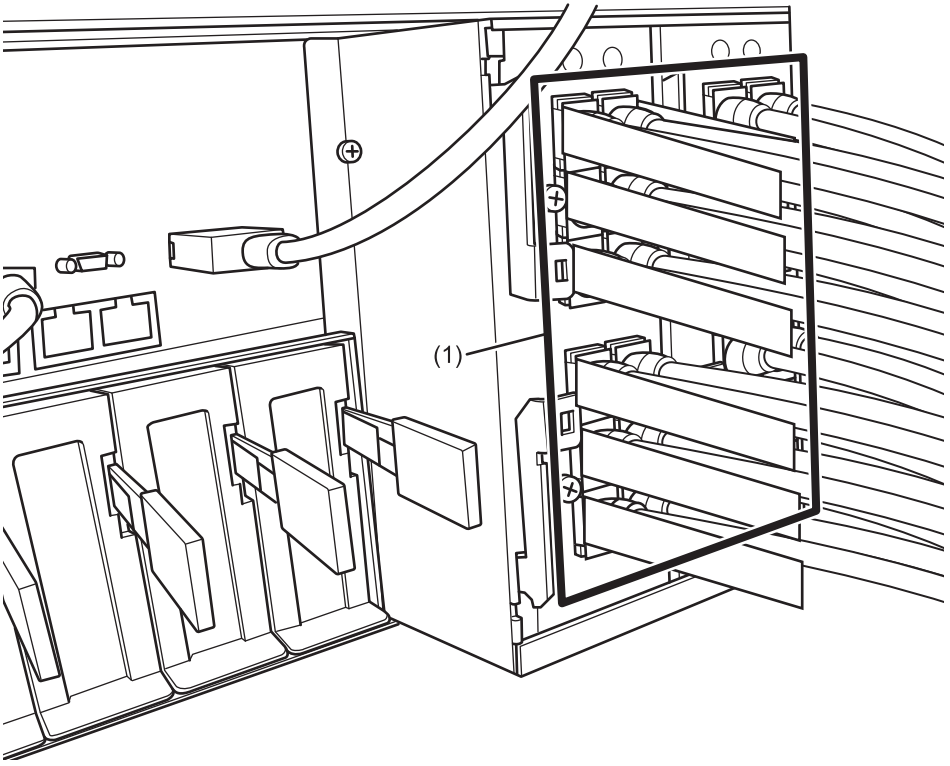


Figure 24-2 Crossbar cables (electrical)



Location number	Component
1	Crossbar cables (electrical) (CBL)

24.2 Before Maintaining a Crossbar Cable (Electrical)

This section describes the types and the flow of the maintenance of the crossbar cables (electrical), as well as precautions that must be observed.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

24.2.1 Types of maintenance

Table 24-1 lists the types of maintenance for the crossbar cables (electrical). For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 24-1 Types of maintenance for crossbar cables (electrical)

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Without crossbar box	Unsupported	Unsupported	Unsupported	Supported	Supported

24.2.2 Maintenance flow

Table 24-2 lists the sequence of the maintenance procedure for the crossbar cables (electrical).

Table 24-2 Maintenance flow

Task		Replacement
1	Preparation	24.3
2	Removing the crossbar cables (electrical)	24.4
3	Installing the crossbar cables (electrical)	24.5
4	Restoring the system	24.6

24.2.3 Precautions for replacement

Note the following points when replacing a crossbar cable (electrical):

- Replace crossbar cables (electrical) in pairs.

24.3 Enabling the Removal of a Crossbar Cable (Electrical)

This section describes the preparations that must be completed prior to removing the crossbar cables (electrical). The preparation procedure differs depending on the maintenance type as follows:

- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

24.3.1 Inactive/Cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

24.3.2 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

   For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

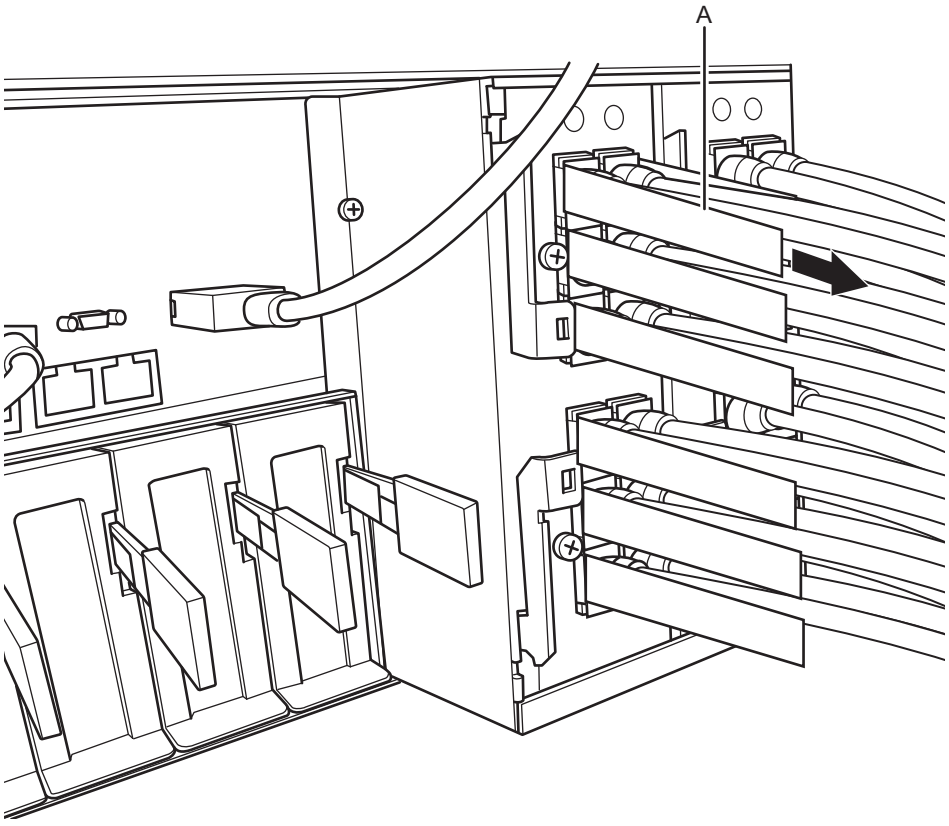
24.4 Removing a Crossbar Cable (Electrical)

This section describes the procedure for removing the crossbar cables (electrical). Enable the removal of the crossbar cables (electrical) before attempting to remove them. For details, see "24.3 Enabling the Removal of a Crossbar Cable (Electrical)."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

1. **Remove the two crossbar cables (electrical) from the SPARC M10-4S.**
   Remove the crossbar cable (electrical) by holding the tab (A in the figure) of the cable and pulling it straight in the direction of the arrow. At this time, do not hold the cable part when pulling the crossbar cable. Pulling the cable part without the connector lock completely released may cause damage.

Figure 24-3 Removing the crossbar cables (electrical)



2. **Remove the two crossbar cables (electrical) from the other chassis.**
Remove the crossbar cable (electrical) by holding the tab of the cable and pulling it straight out in the direction of the arrow. At this time, do not hold the cable part when pulling the crossbar cable. Pulling the cable part without the connector lock completely released may cause damage.

24.5 Installing a Crossbar Cable (Electrical)

This section describes the procedure for connecting the crossbar cables (electrical).

1. **Attach the supplied connection destination label to the new replacement crossbar cable (electrical).**
For the new crossbar cable (electrical), use the same type of label as the one on the cable requiring maintenance and write the same port number on it.

2. **Connect a pair of crossbar cables (electrical) to each chassis.**
Insert the crossbar cable (electrical) by holding the connector part of the cable and inserting it straight into the opening. Do not hold the cable part when

inserting the cable.

Note - If you insert a connector with the tab pulled, the connector may be damaged.
Note - Check that the crossbar cables (electrical) are correctly connected and secure.

24.6 Restoring the System

This section describes the procedure for restoring the system after installing the crossbar cables (electrical). The restoration procedure differs depending on the maintenance type as follows:

- Inactive/Cold maintenance
- System-stopped maintenance

24.6.1 Inactive/Cold maintenance

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

   To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Power on the physical partition requiring maintenance.**
For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."

6. **Close the rack door.**

24.6.2 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit of the chassis requiring maintenance.**
For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

The example below specifies the following:

00: BB-ID of the chassis to start the diagnosis

01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
6. **Close the rack door.**

Chapter 25

Maintaining the Crossbar Cables (Optical)

This chapter describes the procedure for maintaining the crossbar cables (optical).

- Configuration of the Ports for the Crossbar Cables (Optical)
- Before Maintaining a Crossbar Cable (Optical)
- Enabling the Removal of a Crossbar Cable (Optical)
- Removing a Crossbar Cable (Optical)
- Installing a Crossbar Cable (Optical)
- Restoring the System

25.1 Configuration of the Ports for the Crossbar Cables (Optical)

This section describes the configuration and the locations of the ports for connecting the crossbar cables (optical).
The crossbar cables (optical) are used to connect the SPARC M10-4S to a crossbar box in a building block configuration (with a crossbar box).
Each crossbar cable (optical) has a number that corresponds to a port number on the chassis. A port number is assigned to each pair of ports. Crossbar cables (optical) should be replaced as a pair, therefore.

Figure 25-1 Connection ports for crossbar cables (optical) (SPARC M10-4S)

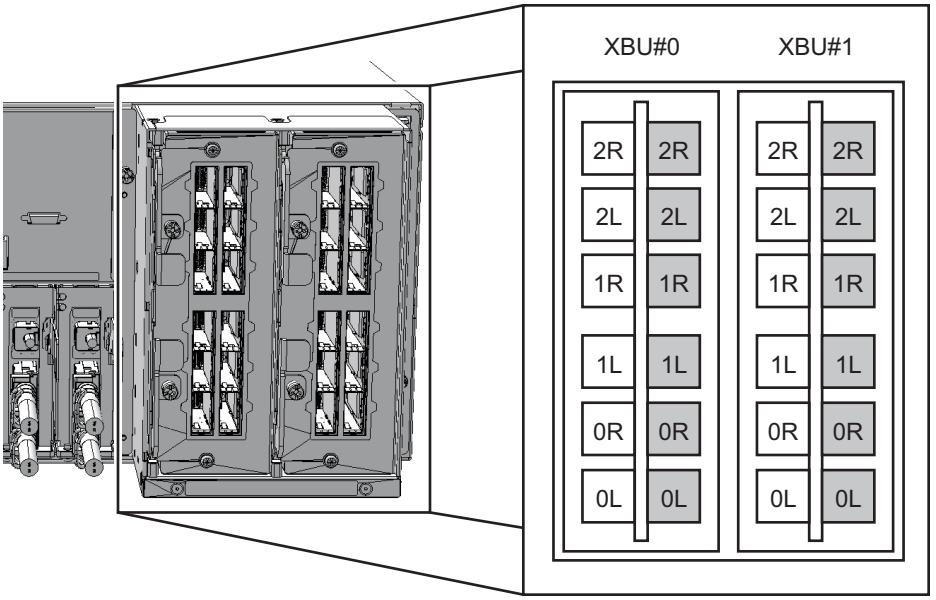


Figure 25-2 Connection ports for crossbar cables (optical) (crossbar box)

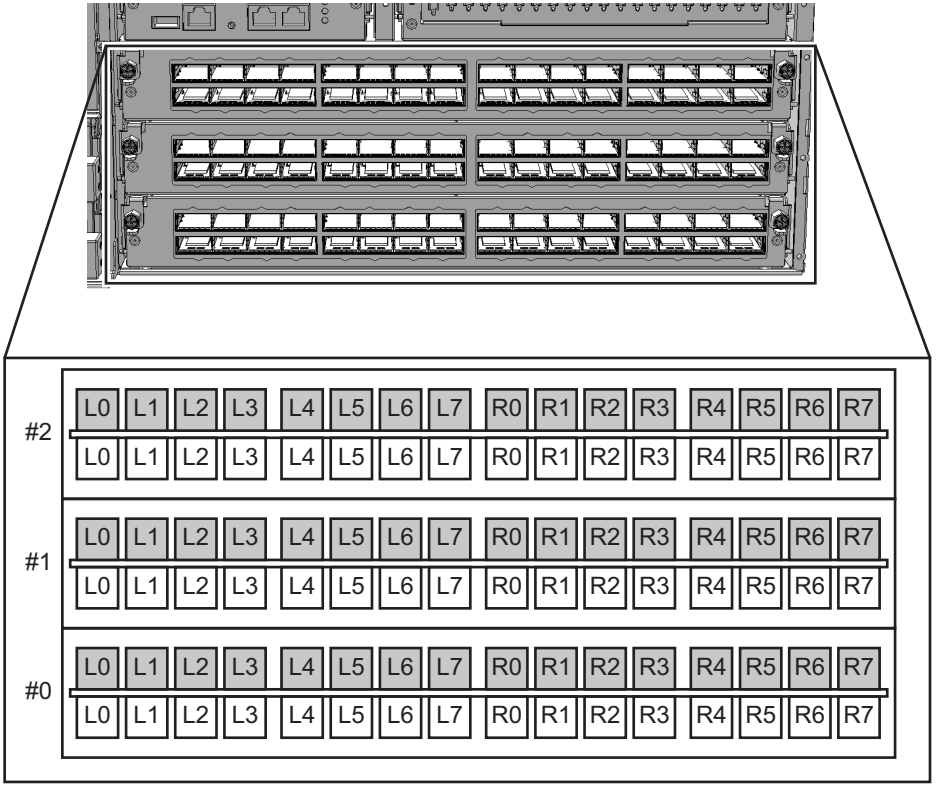


Figure 25-3 Crossbar cables (optical) (SPARC M10-4S)

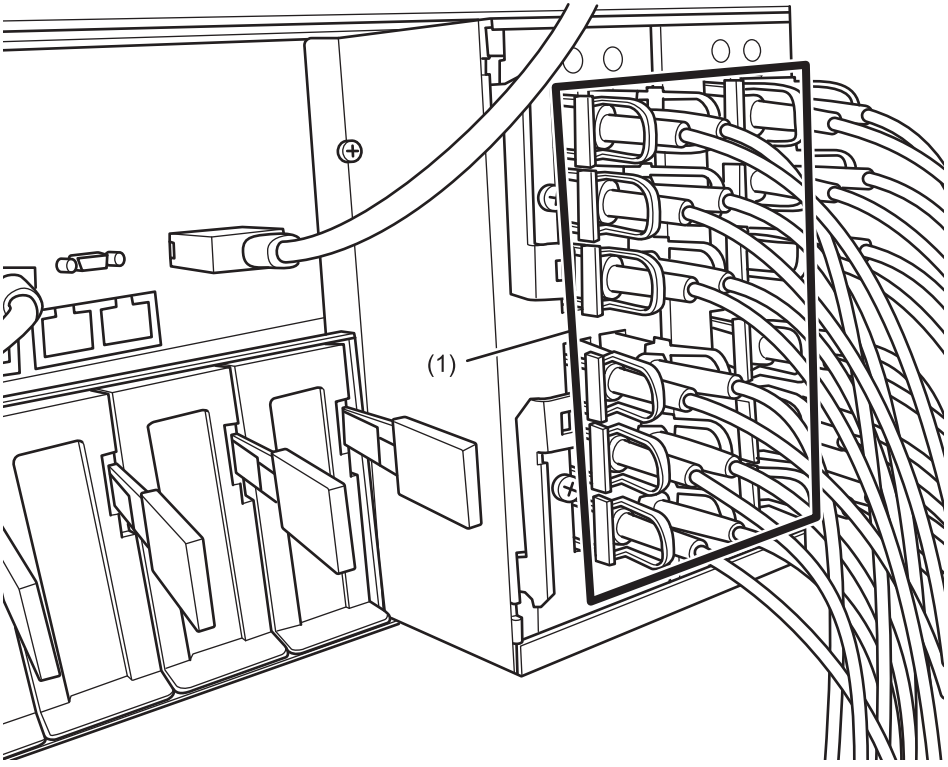
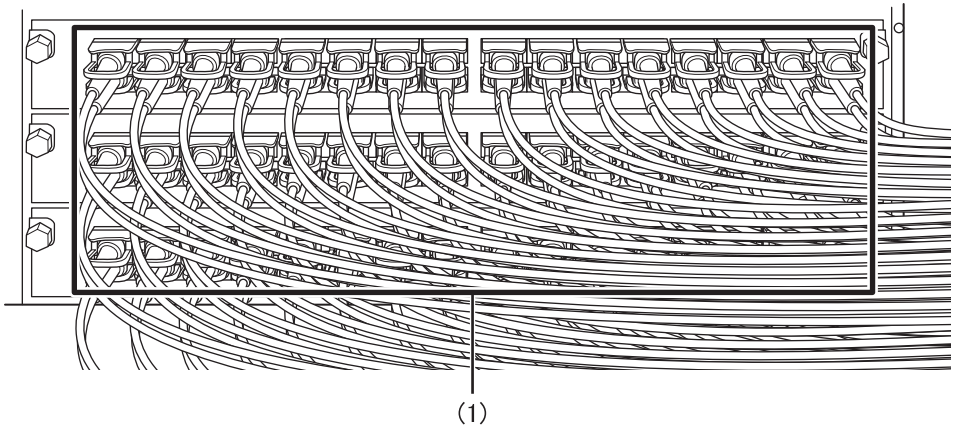


Figure 25-4 Crossbar cables (optical) (crossbar box)



Location number	Component
1	Crossbar cables (optical) (CBL)

25.2 Before Maintaining a Crossbar Cable (Optical)

This section describes the types and the flow of the maintenance of the crossbar cables (optical), as well as precautions that must be observed.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

25.2.1 Types of maintenance

Table 25-1 lists the types of maintenance for the crossbar cables (optical). For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 25-1 Types of maintenance for crossbar cables (optical)

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
With a crossbar box	Unsupported	Unsupported	Unsupported	Supported	Supported

25.2.2 Maintenance flow

Table 25-2 lists the sequence of the maintenance procedure for the crossbar cables (optical).

Table 25-2 Maintenance flow

Task		Replacement
1	Preparation	25.3
2	Removing the crossbar cables (optical)	25.4
3	Installing the crossbar cables (optical)	25.5
4	Restoring the system	25.6

25.2.3 Precautions for replacement

Note the following when replacing the crossbar cables (optical):

- Replace the crossbar cables (optical) in pairs.
- Do not place heavy objects on the crossbar cables (optical).

- Do not bend the crossbar cables (optical) unduly. If you unduly bend a crossbar cable (optical), it may be damaged. Ensure that the static/dynamic bending radius of the crossbar cable (optical) is no less than 35 mm (1.4 in.).

25.3 Enabling the Removal of a Crossbar Cable (Optical)

This section describes the preparations that must be completed prior to removing a crossbar cable (optical). The preparation procedure differs depending on the maintenance type as follows:

- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

25.3.1 Inactive/Cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the SPARC M10-4S requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the SPARC M10-4S power supply unit requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

25.3.2 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the SPARC M10-4S requiring maintenance from the system.**

```
XSCF> replacefru
```

   For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the SPARC M10-4S power supply unit requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

25.4 Removing a Crossbar Cable (Optical)

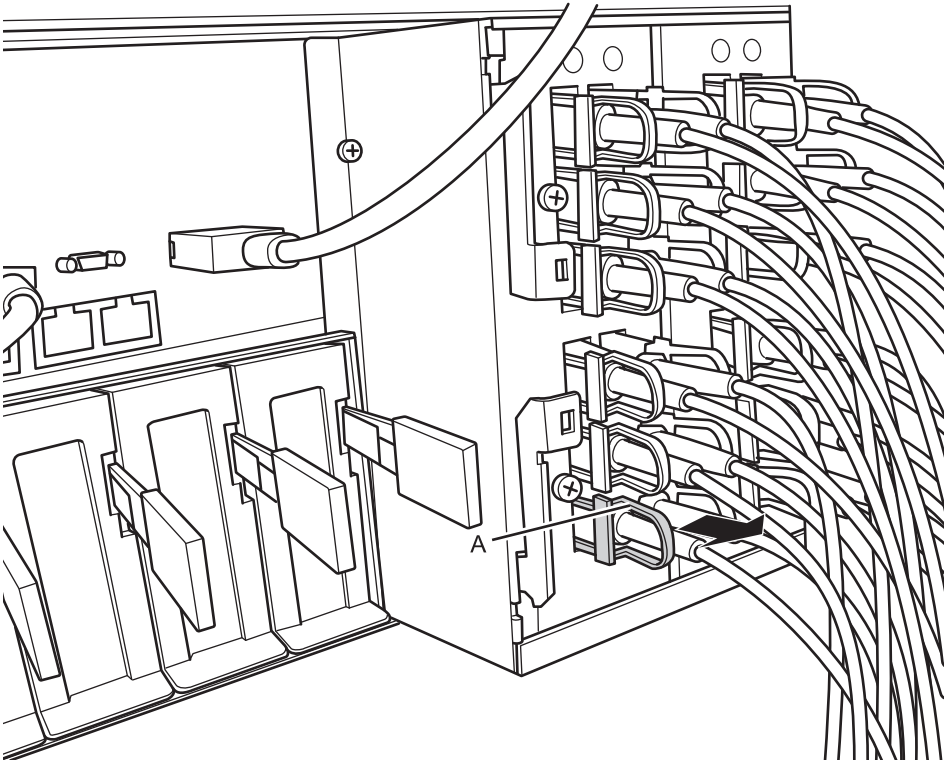
This section describes the procedure for removing the crossbar cables (optical).

Enable the removal of the crossbar cables (optical) before attempting to remove them. For details, see "25.3 Enabling the Removal of a Crossbar Cable (Optical)."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

1. **Remove the two crossbar cables (optical) from the SPARC M10-4S.**
   Remove the crossbar cable (optical) by holding the tab (A in the figure) of the cable and pulling it straight in the direction of the arrow. At this time, do not hold the cable part when pulling the crossbar cable. Pulling the cable part without the connector lock completely released may cause damage.

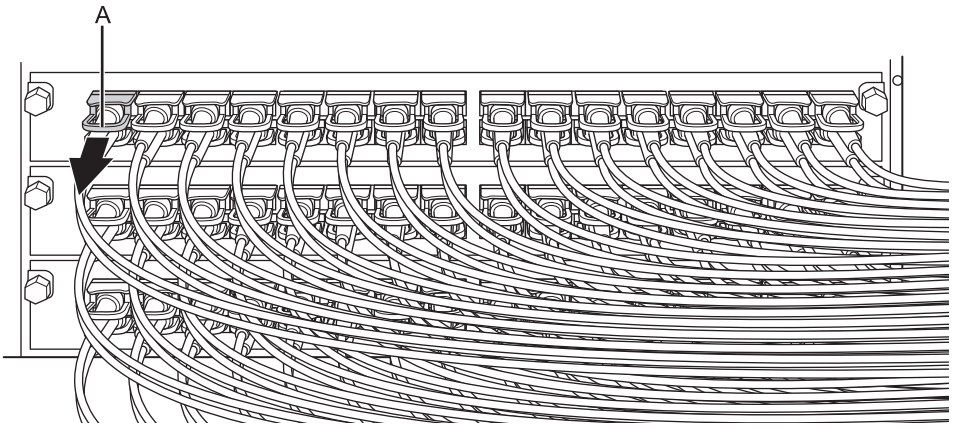
Figure 25-5 Removing the crossbar cables (optical) (SPARC M10-4S)



2. **Remove the other pair of crossbar cables (optical) from the crossbar box.**
   Remove the crossbar cable (optical) by holding the tab (A in the figure) of the cable and pulling it straight in the direction of the arrow. At this time, do not hold the cable part when pulling the crossbar cable. Pulling the cable part without the connector lock completely released may cause damage.

Note - There is no problem if you remove the crossbar cables at the crossbar box while electricity is supplied.
Note - The cables at the rear of the crossbar box are bundled together and fastened to the right-hand cable support with a hook-and-loop fastener. To remove the crossbar cables (optical), therefore, remove the hook-and-loop fastener from the cable support.

Figure 25-6 Removing the crossbar cables (optical) (crossbar box)



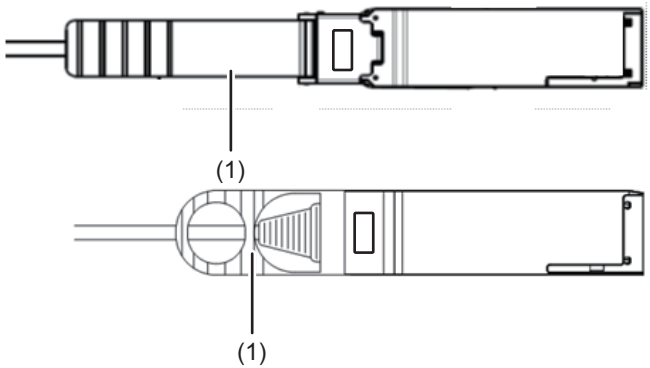
25.5 Installing a Crossbar Cable (Optical)

This section describes the procedure for connecting the crossbar cables (optical).

1. **Attach the supplied connection destination label to the new replacement crossbar cable (optical).**
   For the new crossbar cable (optical), use the same type of label as the one on the cable requiring maintenance and write the same port number on it.
2. **Connect a pair of crossbar cables (optical) to the SPARC M10-4S and the crossbar box.**
   There are two types of crossbar cables (optical). Connect cables of the same type to the same port number. Cables can be distinguished by tab shape. For the tab shapes, see Figure 25-7.

Note - There is no problem if you connect the crossbar cables (optical) at the crossbar box while electricity is supplied.
Note - If you insert a connector with the tab pulled, the connector may be damaged.

Figure 25-7 Crossbar cable (optical) shapes and tabs



Number in figure	Description
1	Tab

Insert the crossbar cable (optical) by holding the connector part of the cable and inserting it straight into the opening. Do not hold the cable part when inserting the cable.

Note - Confirm that the crossbar cables (optical) are correctly connected and secure.
Note - After installing the crossbar cables (optical), use the hook-and-loop fastener to bundle the cables together and secure them to the rear cable support.

25.6 Restoring the System

This section describes the procedure for restoring the system after installing the crossbar cable (optical). The restoration procedure differs depending on the maintenance type as follows:

- Inactive/Cold maintenance
- System-stopped maintenance

25.6.1 Inactive/Cold maintenance

1. **Connect all power cords to the SPARC M10-4S power supply unit requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that SPARC M10-4S has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

   To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

5. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."

6. **Close the rack door.**

25.6.2 System-stopped maintenance

1. **Connect all power cords to the SPARC M10-4S power supply unit requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that SPARC M10-4S has been incorporated into the system.**

For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   Diagnosis is performed when the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the physical partition into which the chassis is incorporated is powered off.

   The example below specifies the following:

   00: BB-ID of the chassis to start the diagnosis

   01: BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify one or more of these.)

   To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

5. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."

6. **Close the rack door.**

Chapter 26

Maintaining the XSCF BB Control Cables

This chapter describes the procedure for maintaining the XSCF BB control cables.

- Configuration of the Ports for the XSCF BB Control Cables
- Before Maintaining an XSCF BB Control Cable
- Enabling the Removal of an XSCF BB Control Cable
- Removing an XSCF BB Control Cable
- Installing an XSCF BB Control Cable
- Restoring the System

26.1 Configuration of the Ports for the XSCF BB Control Cables

This section describes the configuration and the location of the ports to which the XSCF BB control cables are connected.
The XSCF BB control cables are used to connect the XSCFs mounted in the SPARC M10-4S or crossbar box chassis.

Figure 26-1 Locations of XSCF BB control cables (SPARC M10-4S)

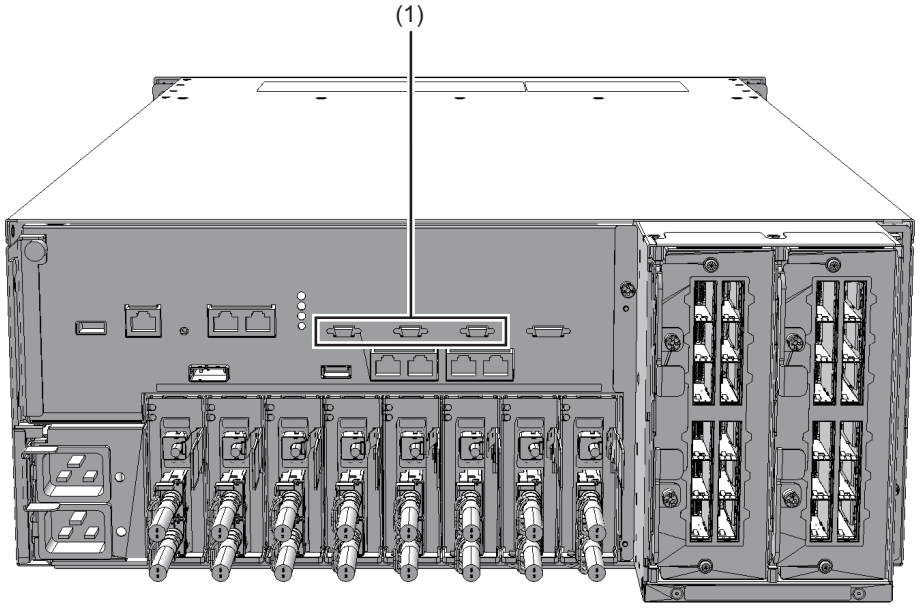
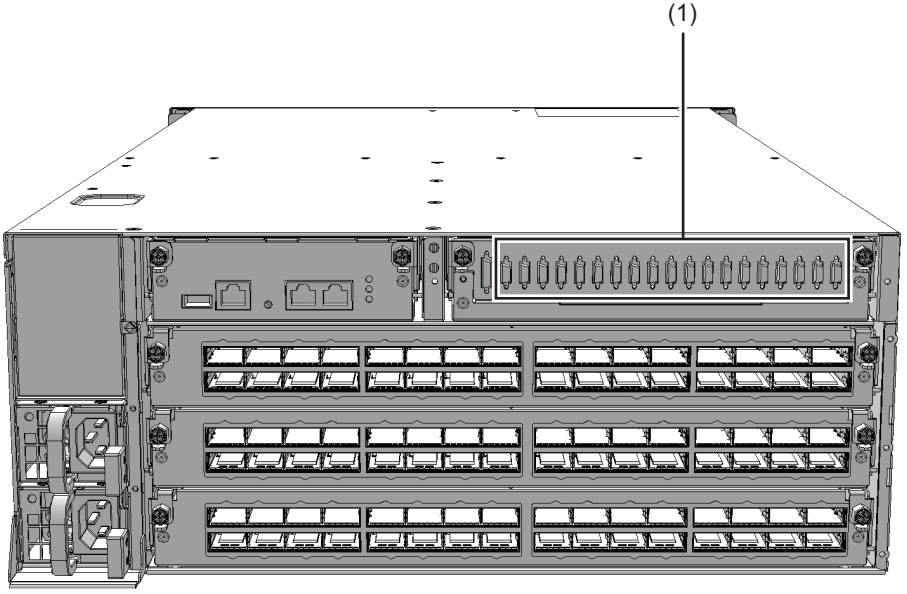


Figure 26-2 Locations of XSCF BB control cables (crossbar box)



Location number	Component
1	XSCF BB control cables (SCF_CBL)

26.2 Before Maintaining an XSCF BB Control Cable

This section describes the types and the flow of the maintenance of the XSCF BB control cables.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

26.2.1 Types of maintenance

Table 26-1 lists the types of maintenance for the XSCF BB control cables. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 26-1 Types of maintenance for XSCF BB control cable

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration (without crossbar box)	Supported (*)	Supported	Supported	Supported	Supported
Building block configuration (with crossbar box)	Supported (*)	Supported	Supported	Supported	Supported

*: The XSCF must be configured as a slave before maintenance is started. If it is operating as the master XSCF, switch it to a standby XSCF.

26.2.2 Maintenance flow

Table 26-2 lists the sequence of the maintenance procedure for the XSCF BB control cables.

Table 26-2 Maintenance flow

Details of update process		Replacement
1	Preparation	26.3
2	Removing the XSCF BB control cables	26.4
3	Installing the XSCF BB control cables	26.5
4	Restoring the system	26.6

26.3 Enabling the Removal of an XSCF BB Control Cable

This section describes preparations that must be completed prior to removing the XSCF BB control cables. The preparation procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

26.3.1 Active/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

   For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Execute the switchscf command to switch the master XSCF to a standby XSCF.**
   Perform this when the chassis requiring maintenance is operating as a master chassis.

```
XSCF> switchscf -t Standby
```

6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

26.3.2 Active/Cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

6. **Remove all the power cords from the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

26.3.3 Inactive/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."

26.3.4 Inactive/Cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

26.3.5 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring**

maintenance.

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

26.4 Removing an XSCF BB Control Cable

This section describes the procedure for removing the XSCF BB control cables. Enable removal of the XSCF BB control cables before attempting to remove them. For details, see "26.3 Enabling the Removal of an XSCF BB Control Cable."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

---

1. **Remove the XSCF BB control cable from the SPARC M10-4S or the crossbar box.**
   Pull out an XSCF BB control cable while pushing the lock release buttons (A in the figure) on the both sides of the cable.

Note - The cables on the rear of the crossbar box are bundled together and fastened to the right-hand cable support with a hook-and-loop fastener. When removing the XSCF BB control cables, remove the hook-and-loop fastener from the cable support.

Figure 26-3 Removing the XSCF BB control cables (SPARC M10-4S)

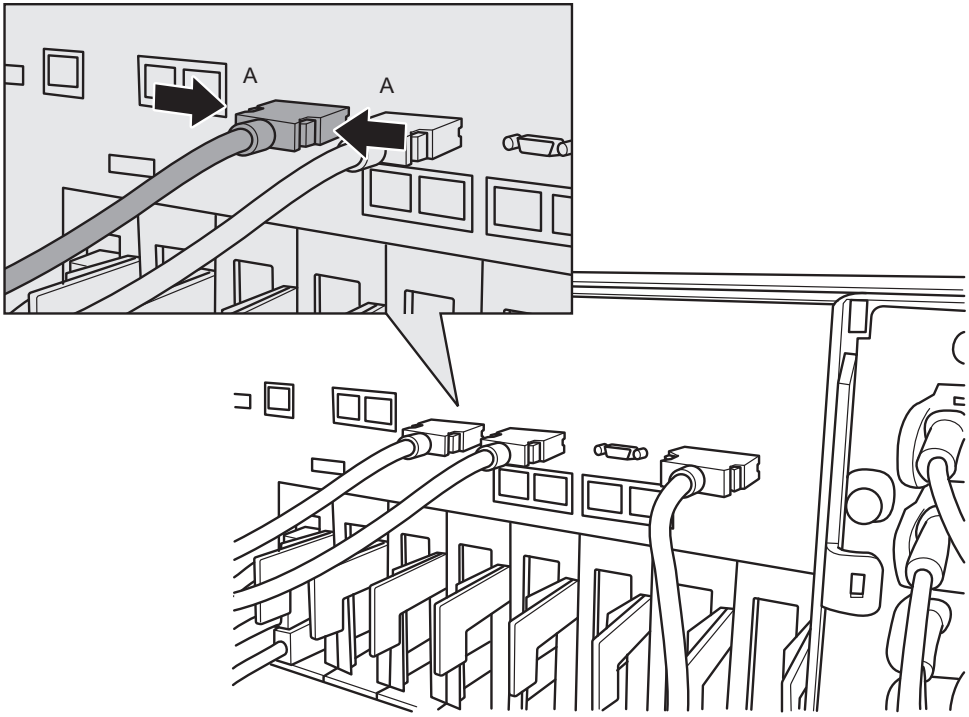
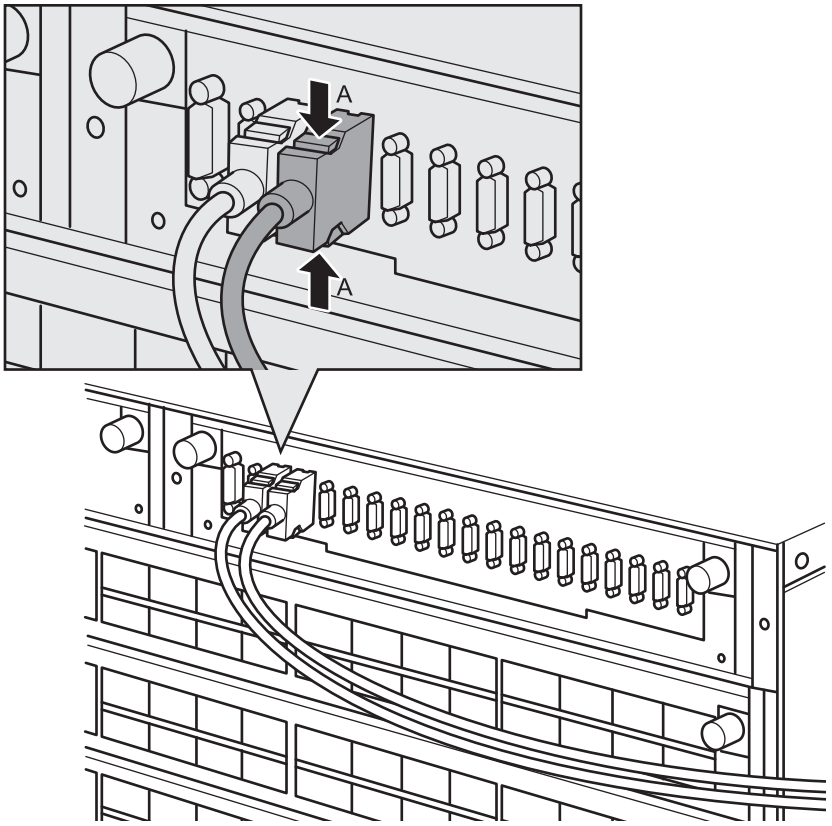


Figure 26-4 Removing the XSCF BB control cables (crossbar box)



2. **Remove the XSCF BB control cables from the other chassis.**
   Pull out an XSCF BB control cable while pushing the lock release buttons (A in the figure) on the both sides of the cable.

26.5 Installing an XSCF BB Control Cable

This section describes the procedure for installing the XSCF BB control cables.

1. **Attach the supplied connection destination label to the new replacement XSCF BB control cable.**
   For the new XSCF BB control cable, use the same type of label as the one on the cable requiring maintenance and write the same port number on it.
2. **Connect the XSCF BB control cable to SPARC M10-4S or the crossbar box.**

Note - Check that the XSCF BB control cables are correctly connected and secure.
Note - After connecting the XSCF BB control cable, use the hook-and-loop fastener to bundle the cables together and secure them to the rear cable support.

26.6 Restoring the System

This section describes the procedure for restoring the system after installing the XSCF BB control cables. The restoration procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

26.6.1 Active/Hot maintenance

1. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
2. **Execute the switchscf command to switch the standby XSCF to the master XSCF.**
   Execute the command if the chassis requiring maintenance has been switched to the standby XSCF.

```
XSCF> switchscf -t Active
```

3. **Close the rack door.**

26.6.2 Active/Cold maintenance

1. **Connect all the power cords to the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Close the rack door.**

26.6.3 Inactive/Hot maintenance

1. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
2. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
3. **Close the rack door.**

26.6.4 Inactive/Cold maintenance

1. **Connect all the power cords to the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

26.6.5 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the chassis has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

Chapter 27

Maintaining the XSCF DUAL Control Cables

This chapter describes the procedure for maintaining the XSCF DUAL control cables.

- Configuration of the XSCF DUAL Control Ports
- Before Maintaining an XSCF DUAL Control Cable
- Enabling the Removal of an XSCF DUAL Control Cable
- Removing an XSCF DUAL Control Cable
- Installing an XSCF DUAL Control Cable
- Restoring the System

27.1 Configuration of the XSCF DUAL Control Ports

This section describes configuration and location of the XSCF DUAL control ports. The XSCF DUAL control cable is used to connect the master XSCF and a standby XSCF that are mounted on a SPARC M10-4S or crossbar box so as to duplicate the XSCF.

Figure 27-1 Location of XSCF DUAL control port (SPARC M10-4S)

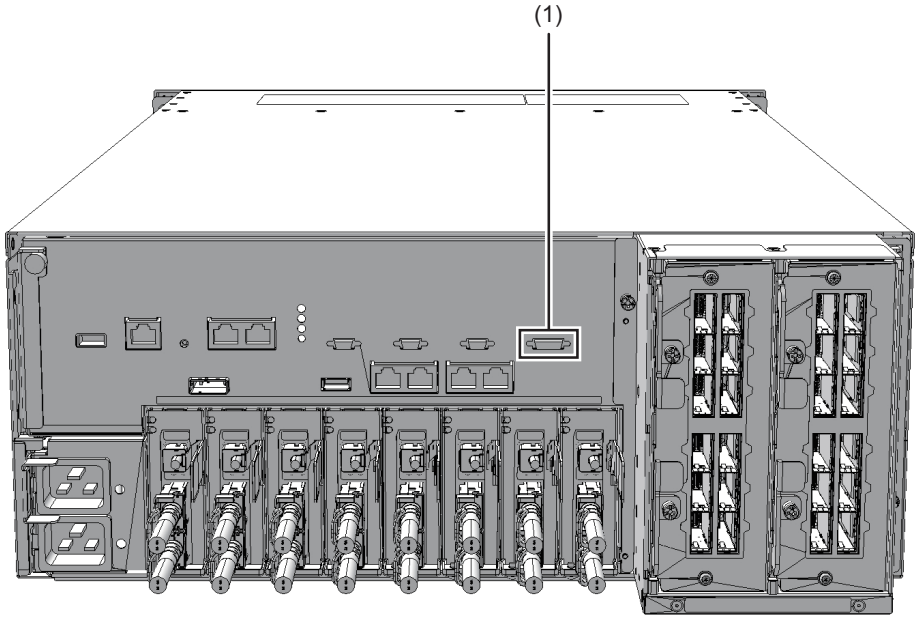
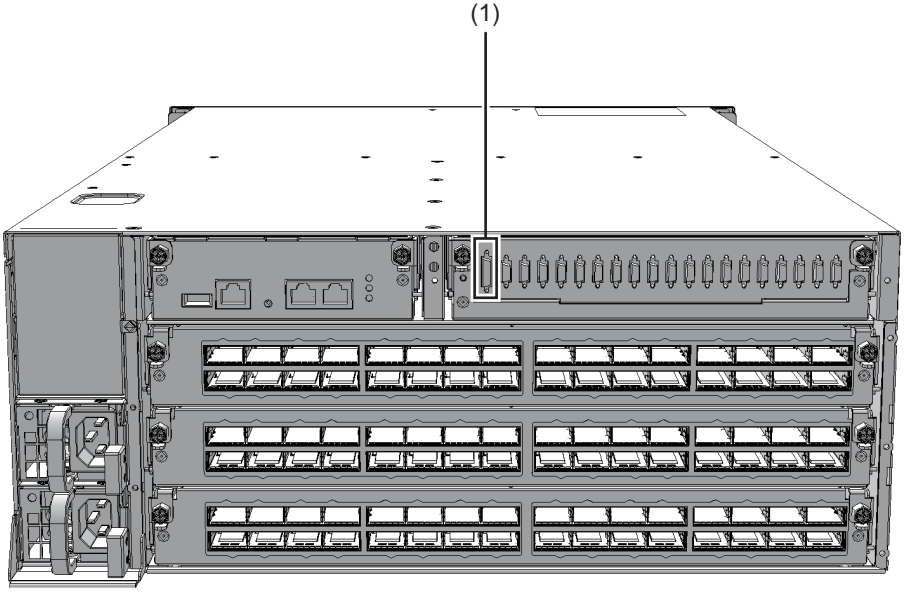


Figure 27-2 Location of XSCF DUAL control port (crossbar box)



Location number	Component
1	XSCF DUAL control cables (SCF_DUAL)

27.2 Before Maintaining an XSCF DUAL Control Cable

This section describes the types and the flow of the maintenance of the XSCF DUAL control cables.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

27.2.1 Types of maintenance

Table 27-1 lists the types of maintenance for the XSCF DUAL control cables. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 27-1 Types of maintenance for the XSCF DUAL control cables

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration (without crossbar box)	Supported (*)	Supported	Supported	Supported	Supported
Building block configuration (with crossbar box)	Supported (*)	Supported	Supported	Supported	Supported

*: The XSCF must be configured as a slave before maintenance is started. If it is operating as the master XSCF, switch it to a standby XSCF.

27.2.2 Maintenance flow

Table 27-2 lists the sequence of the maintenance procedure for the XSCF DUAL control cables.

Table 27-2 Maintenance flow

Task		Replacement
1	Preparation	27.3
2	Removing the XSCF DUAL control cables	27.4
3	Installing the XSCF DUAL control cables	27.5
4	Restoring the system	27.6

27.3 Enabling the Removal of an XSCF DUAL Control Cable

This section describes the preparation that must be completed prior to removing an XSCF DUAL control cable. The preparation procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

27.3.1 Active/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."
5. **Execute the switchscf command to switch the master XSCF to a standby XSCF.**
Perform this when the chassis requiring maintenance is operating as a master chassis.

```
XSCF> switchscf -t Standby
```

6. **Execute the replacefru command to release the XSCF DUAL control cable requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

27.3.2 Active/Cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Execute the replacefru command to release the XSCF DUAL control cable requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

6. **Remove all the power cords from the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

27.3.3 Inactive/Hot maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."

27.3.4 Inactive/Cold maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off the physical partition requiring maintenance.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the XSCF DUAL control cable requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

27.3.5 System-stopped maintenance

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring**

maintenance.

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
   For details, see "4.2 Confirming the System Configuration."
5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the chassis requiring maintenance from the system.**

```
XSCF> replacefru
```

For details, see "5.1 Releasing an FRU from the System with the replacefru Command."

7. **Remove all the power cords from the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

27.4 Removing an XSCF DUAL Control Cable

This section describes the procedure for removing an XSCF DUAL control cable. Enable the removal of the XSCF DUAL control cables before attempting to remove them. For details, see "27.2 Before Maintaining an XSCF DUAL Control Cable."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

---

1. **Remove the XSCF DUAL control cables from the SPARC M10-4S or the crossbar box.**
   Pull out the XSCF DUAL control cable while pushing the lock release buttons (A in the figure) on the both sides of the cable.

Note - The cables on the rear of the crossbar box are bundled together and fastened to the right-hand cable support with a hook-and-loop fastener. To remove the XSCF DUAL control cables, therefore, remove the hook-and-loop fastener from the cable support.

Figure 27-3 Removing the XSCF DUAL control cables (SPARC M10-4S)

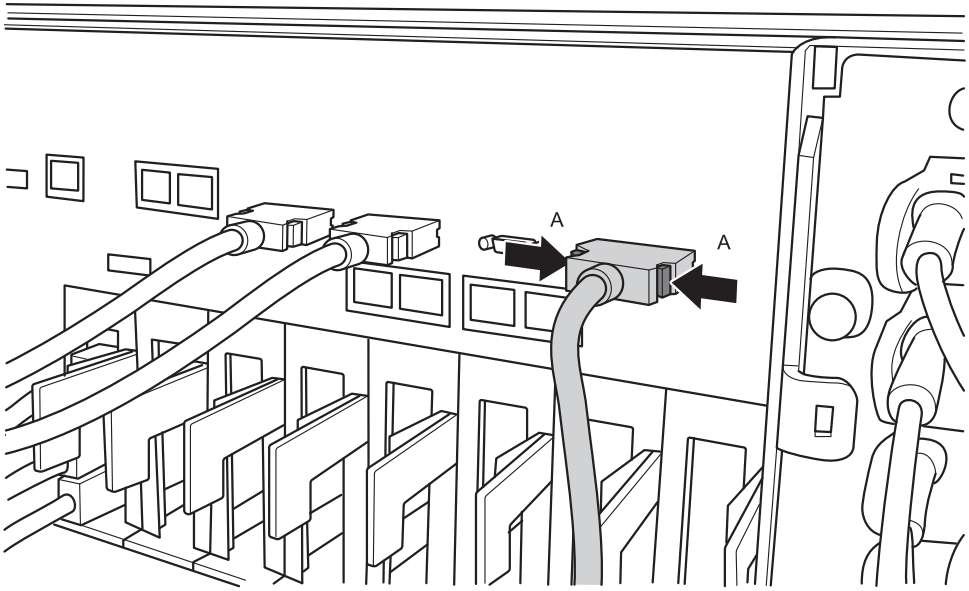
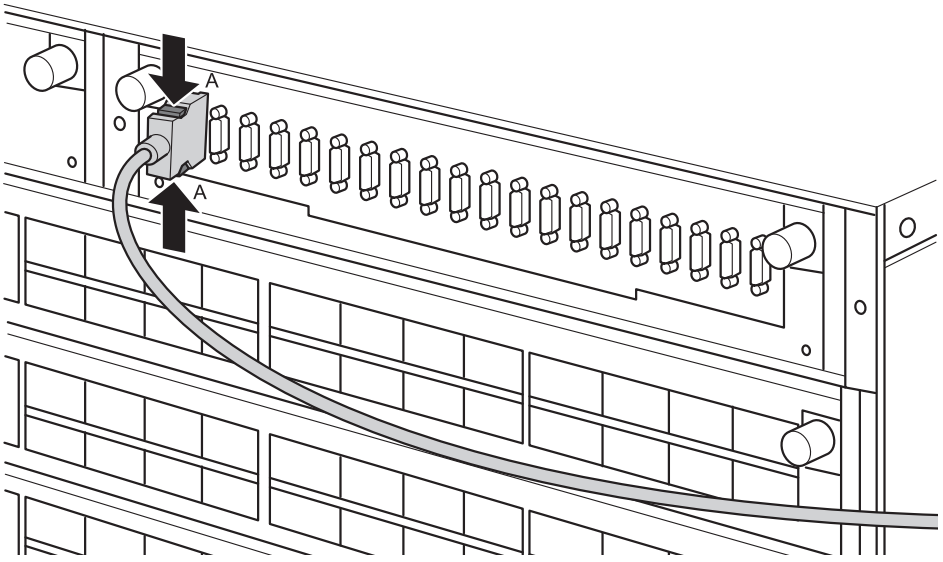


Figure 27-4 Removing the XSCF DUAL control cables (crossbar box)



2. **Remove the XSCF DUAL control cables from the other chassis.**
   Pull out the XSCF DUAL control cable while pushing the lock release buttons on the both sides of the cable.

27.5 Installing an XSCF DUAL Control Cable

This section describes the procedure for installing an XSCF DUAL control cable.

1. **Attach the supplied connection destination label to the replacement XSCF DUAL control cable.**
   For the new XSCF DUAL control cable, use the same type of label as the one on the cable requiring maintenance and write the same port number on it.
2. **Connect the XSCF DUAL control cable to SPARC M10-4S or the crossbar box.**

Note - Check that XSCF DUAL control cable is correctly connected and secure.
Note - After connecting the XSCF DUAL control cable, use the hook-and-loop fastener to bundle the cables together and fasten them to rear cable support.

27.6 Restoring the System

This section describes the procedure for restoring the system after installing the XSCF DUAL control cables. The restoration procedure differs depending on the maintenance type as follows:

- Active/Hot maintenance
- Active/Cold maintenance
- Inactive/Hot maintenance
- Inactive/Cold maintenance
- System-stopped maintenance

27.6.1 Active/Hot maintenance

1. **Return to the operation of the XSCF firmware replacefru command to confirm that the XSCF DUAL control cable has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
2. **Execute the showstatus command to confirm that the FRU is operating**

normally after the completion of maintenance.

```
XSCF> showstatus
```

3. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

4. **Close the rack door.**

27.6.2 Active/Cold maintenance

1. **Connect all the power cords to the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the XSCF DUAL control cable has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Execute the showstatus command to confirm that the XSCF DUAL control cable is operating normally after the completion of maintenance.**

```
XSCF> showstatus
```

4. **Execute the showhardconf command to check the hardware configuration and the status of each component.**

```
XSCF> showhardconf
```

5. **Close the rack door.**

27.6.3 Inactive/Hot maintenance

1. **Return to the operation of the XSCF firmware replacefru command to confirm that the XSCF DUAL control cable has been incorporated into the system.**

For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

2. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
3. **Close the rack door.**

27.6.4 Inactive/Cold maintenance

1. **Connect all the power cords to the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the XSCF DUAL control cable has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on the physical partition requiring maintenance.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

27.6.5 System-stopped maintenance

1. **Connect all the power cords to the PSU backplane unit or power supply unit of the chassis requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the XSCF DUAL control cable has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."
3. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
4. **Close the rack door.**

Chapter 28

Maintaining the Cable Kit of the Crossbar Box

This chapter describes the procedure for maintaining the cable kit mounted on the crossbar box.

- Configuration of the Cable Kit
- Before Maintaining the Cable Kit
- Enabling the Removal of the Cable Kit
- Removing the Cable Kit
- Installing the Cable Kit
- Restoring the System

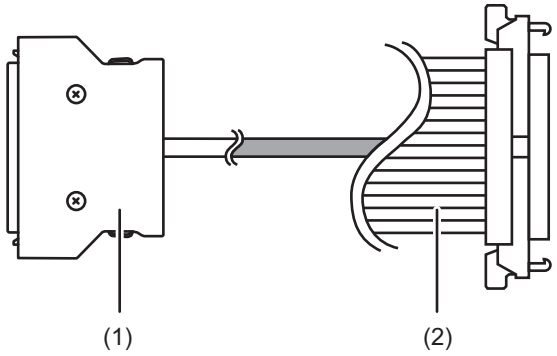
28.1 Configuration of the Cable Kit

This section describes the configuration and location of the cable kit.
The cable kit is a set of cables for connections between the crossbar backplane unit and terminal board and between the terminal board and fan backplane.
The cable kit contains the following cables.

28.1.1 Cables for the connection between the crossbar backplane unit and terminal board

- Cable (SIG)
  Cable for the connection between the crossbar backplane unit and terminal board (SIG)

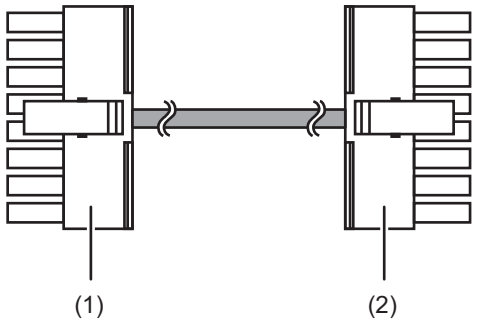
Figure 28-1 Cable (SIG) (between the crossbar backplane unit and terminal board)



Location number	Component
1	Connector (terminal board (SIG) side)
2	Connector (crossbar backplane unit side)

- Cable (PWR)
  Cable for the connection between the crossbar backplane unit and terminal board (PWR)

Figure 28-2 Cable (PWR) (between the crossbar backplane unit and terminal board)

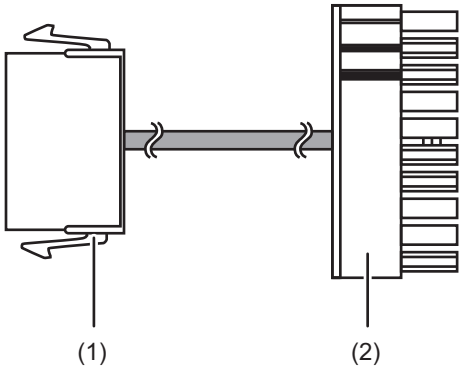


Location number	Component
1	Connector (terminal board (PWR) side)
2	Connector (crossbar backplane unit side)

28.1.2 Cables for the connection between the terminal board and fan backplane

- Cable (PWR)
  Cable for the connection between the terminal board and fan backplane (PWR)

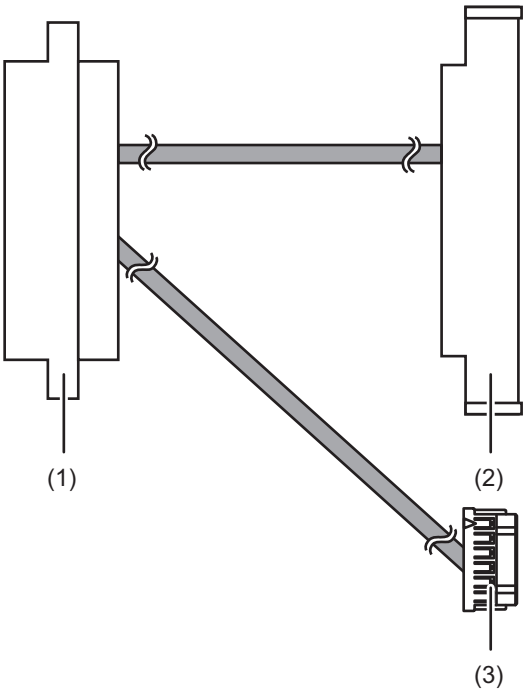
Figure 28-3 Cable (PWR) (between the terminal board and fan backplane)



Location number	Component
1	Connector (terminal board side)
2	Connector (fan backplane (PWR) side)

- Cable (SIG)
  Cable for the connection of the terminal board and fan backplane (SIG) to the operation panel

Figure 28-4 Cable (SIG) (for the terminal board and fan backplane to the operation panel)

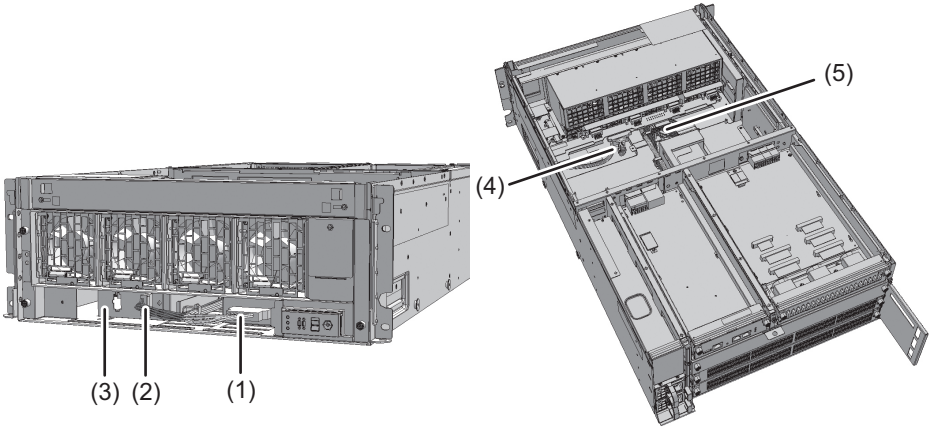


Location number	Component
1	Connector (terminal board side)
2	Connector (fan backplane (SIG) side)
3	Connector (operation panel side)

28.1.3 Locations for the cable kit

The locations of cable kit connections are as follows.

Figure 28-5 Locations for the cable kit



Location number	Component	Connection
1	Cable (SIG)	Crossbar backplane unit and terminal board (SIG)
2	Cable (PWR)	Crossbar backplane unit and terminal board (PWR)
3	Terminal board	
4	Cable (SIG)	Terminal board (SIG) and fan backplane
5	Cable (PWR)	Terminal board (PWR) and fan backplane

28.2 Before Maintaining the Cable Kit

This section describes the types and the flow of maintenance of the cable kit.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

28.2.1 Types of maintenance

Table 28-1 lists the types of maintenance for the cable kit. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 28-1 Types of maintenance for cable kit

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Unsupported	Unsupported (*1)	Unsupported	Unsupported (*1)	Supported (*2)

*1: If any physical partition is currently operating, the crossbar box cannot be powered off.
*2: All the physical partitions must be powered off, and the system must be completely shut down.

28.2.2 Maintenance flow

Table 28-2 lists the sequence of the maintenance procedure for the cable kit.

Table 28-2 Maintenance flow

Details of update process		Replacement
1	Preparation	28.3
2	Removing the cable kit	28.4
3	Installing the cable kit	28.5
4	Restoring the system	28.6

28.3 Enabling the Removal of the Cable Kit

This section describes the preparations that must be completed prior to removing the cable kit.

Caution - To completely shut down the system, all the power cords must be removed. If the power cords are not removed, an electrical failure may occur.

1. **Open the rack door.**
2. **Log in to the XSCF shell.**
3. **Execute the showlogs command to identify the component requiring maintenance.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

4. **Confirm the hardware and software configurations.**
For details, see "4.2 Confirming the System Configuration."

5. **Power off all the physical partitions.**
   For details, see "5.3 Powering Off the Physical Partition Requiring Maintenance."
6. **Execute the replacefru command to release the crossbar backplane unit requiring maintenance from the system.**

```
XSCF> replacefru
```

   For details, see "5.1 Releasing an FRU from the System with the replacefru Command."
7. **Remove all the power cords from the power supply unit of the crossbar box requiring maintenance.**
   For details, see "5.5.2 Removing the power cord."

Note - In the case of a dual power feed, make a note of the locations of the power cords before disconnecting them to ensure that they are reinstalled correctly.

28.4 Removing the Cable Kit

This section describes the procedure for removing the cable kit at each cable connection destination.
For the cable connection destinations, see "28.1 Configuration of the Cable Kit."
Enable the removal of the cable kit before attempting to remove it. For details, see "28.3 Enabling the Removal of the Cable Kit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

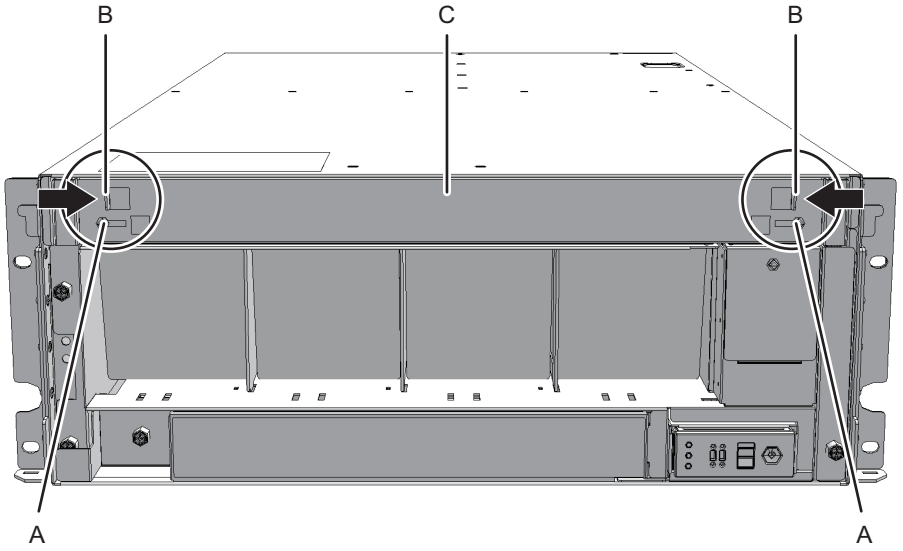
28.4.1 Removing the cables for the connection between the crossbar backplane unit and terminal board

Remove the cable (SIG) or cable (PWR) connecting the crossbar backplane unit and terminal board.

1. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."
2. **Remove all the fan units.**
   For details, see "19.4 Removing a Fan Unit."

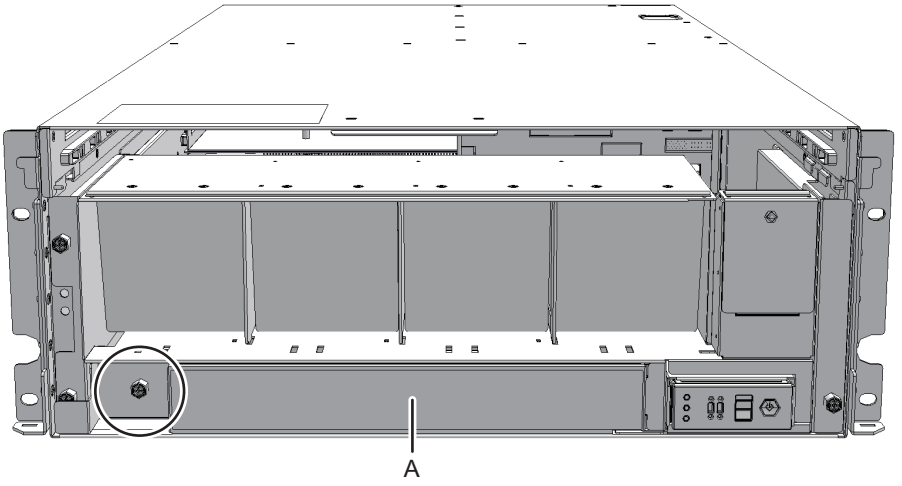
3. **Loosen the two screws (A in the figure) securing the upper cover and then slide the right and left stoppers (B in the figure) inwards. Then, remove the upper cover (C in the figure).**

Figure 28-6 Removing the upper cover



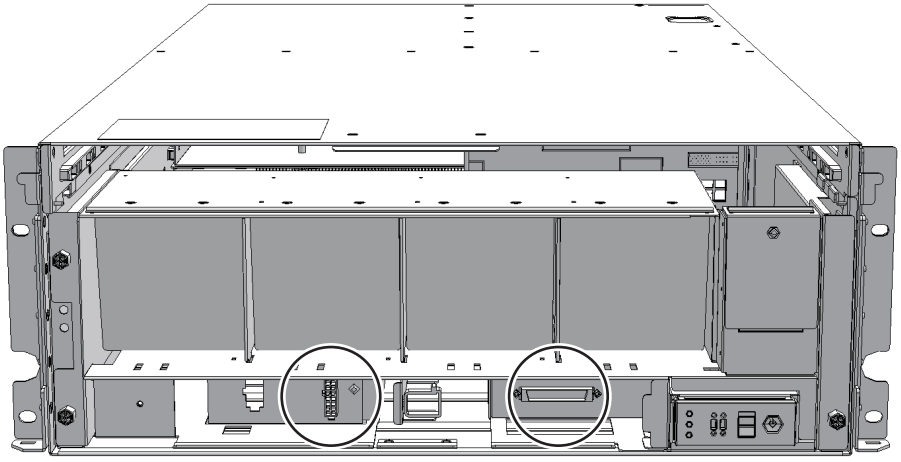
4. **Loosen the one screw (A in the figure) securing the lower cover and then slide the lower cover to the left to remove it.**

Figure 28-7 Removing the lower cover



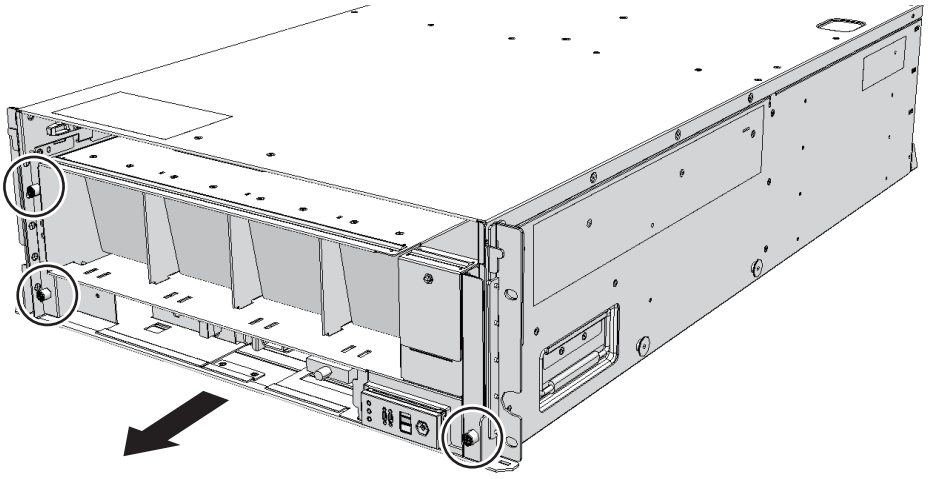
5. **Disconnect the two cables from the fan shelf.**
Arrange the removed cables in the center.

Figure 28-8 Removing the cables



6. **Loosen the three screws securing the fan shelf and partially pull out the fan shelf.**

Figure 28-9 Removing the fan shelf



7. **Place a hand under the fan shelf to support it and then carefully remove it from the chassis.**

Note - Remove the fan shelf while paying careful attention to the two cables arranged in the center.

Note - Place the removed fan shelf on a grounded antistatic ESD mat.

---

8. **Remove the cable connected to the crossbar backplane unit from the connector.**

Figure 28-10 Removing the cable (cable (SIG))

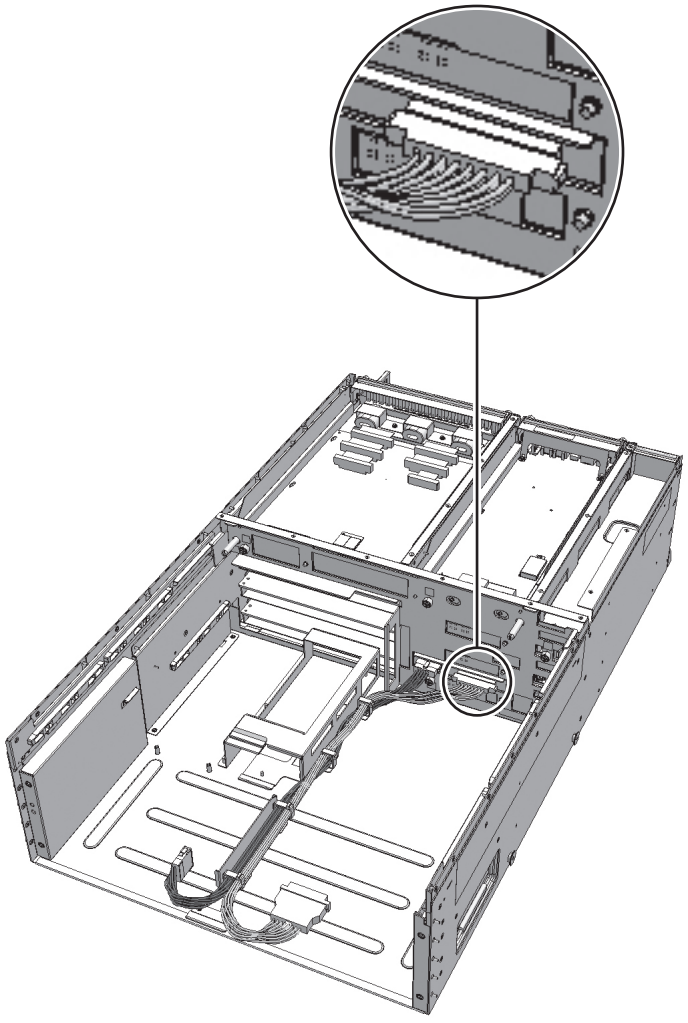
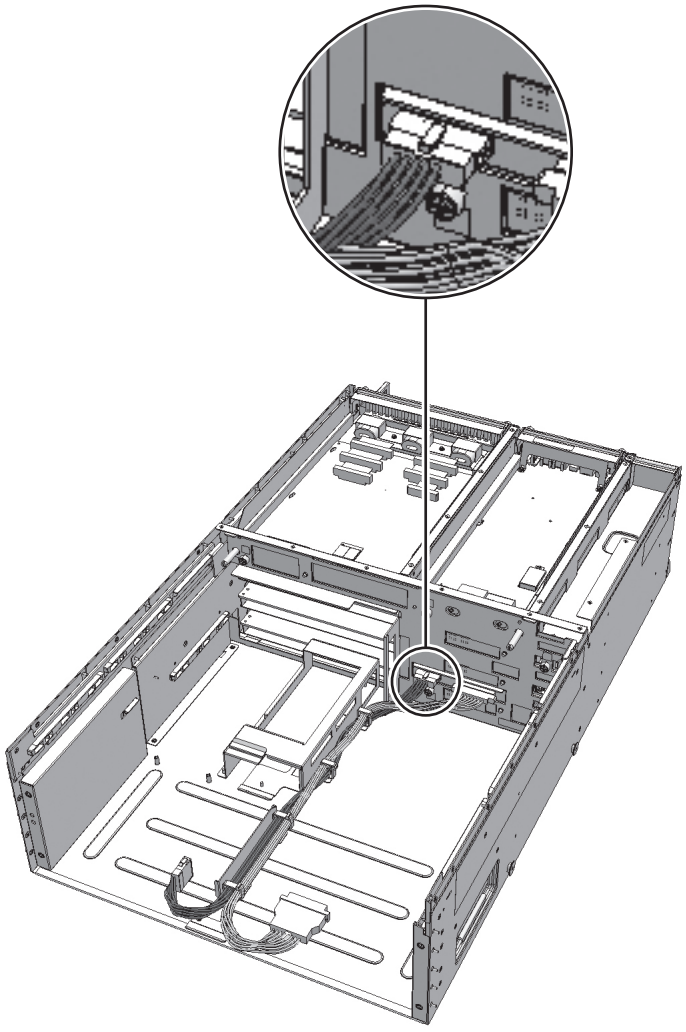
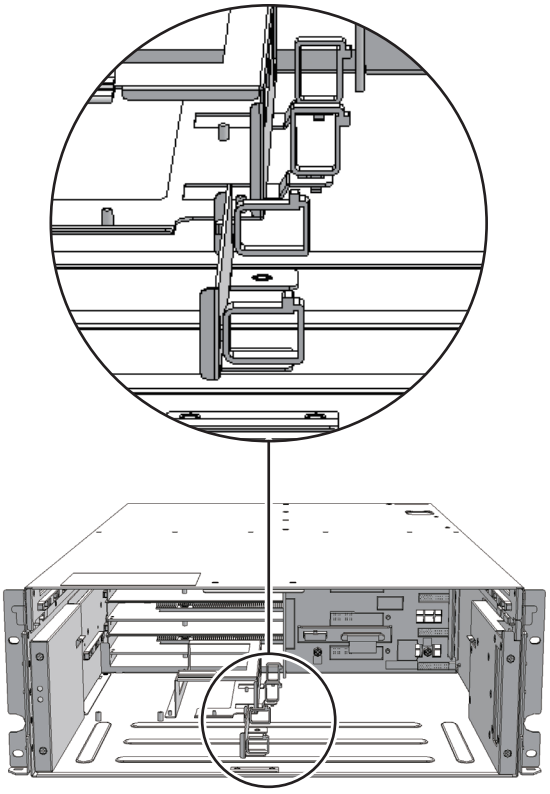


Figure 28-11 Removing the cable (cable (PWR))



9. **Remove the cable from the clamps.**

Figure 28-12 Removing the cables

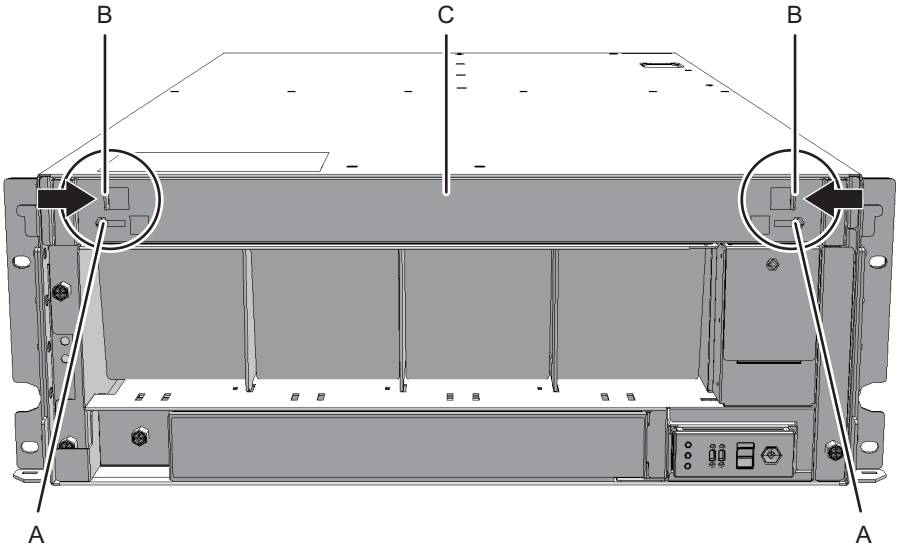


28.4.2 Removing the cables for the connection between the terminal board and fan backplane

Remove the cable (SIG) or cable (PWR) connecting the terminal board and fan backplane.

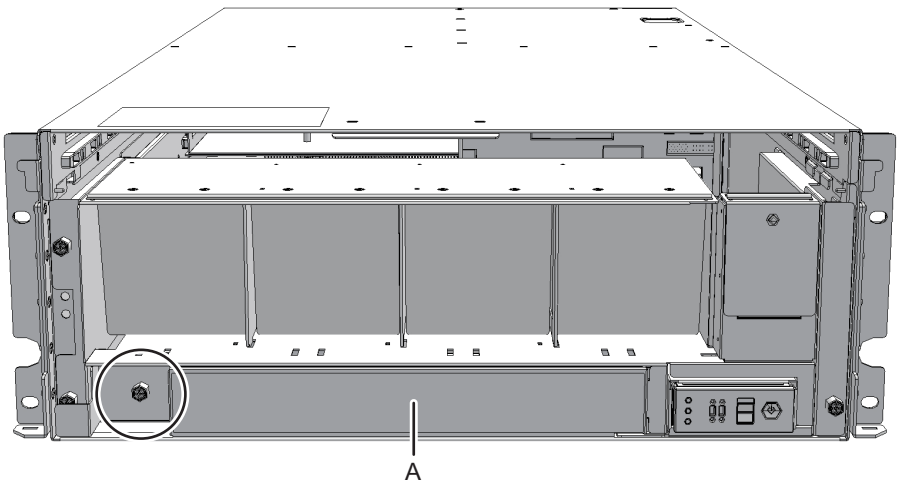
1. **Remove the front cover.**
   For details, see "5.5.3 Removing the front cover."
2. **Remove all the fan units.**
   For details, see "19.4 Removing a Fan Unit."
3. **Loosen the two screws (A in the figure) securing the upper cover and then slide the right and left stoppers (B in the figure) inwards. Then, remove the upper cover (C in the figure).**

Figure 28-13 Removing the upper cover



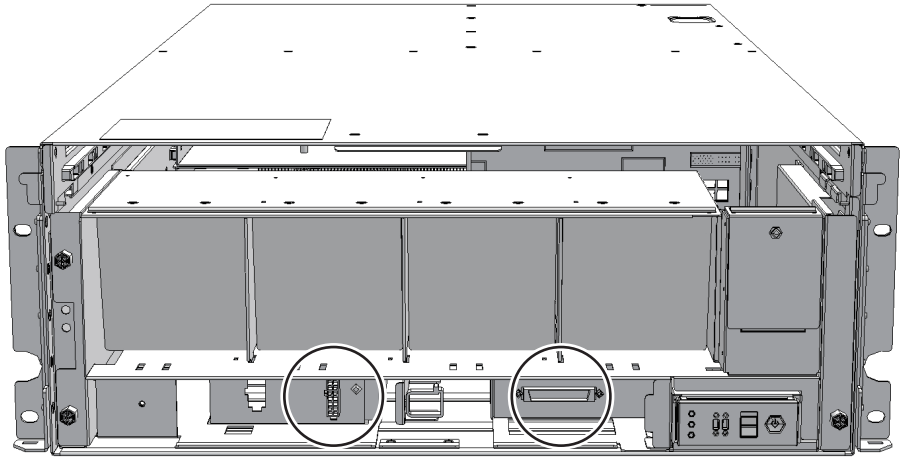
4. **Loosen the one screw (A in the figure) securing the lower cover and then slide the lower cover to the left to remove it.**

Figure 28-14 Removing the lower cover



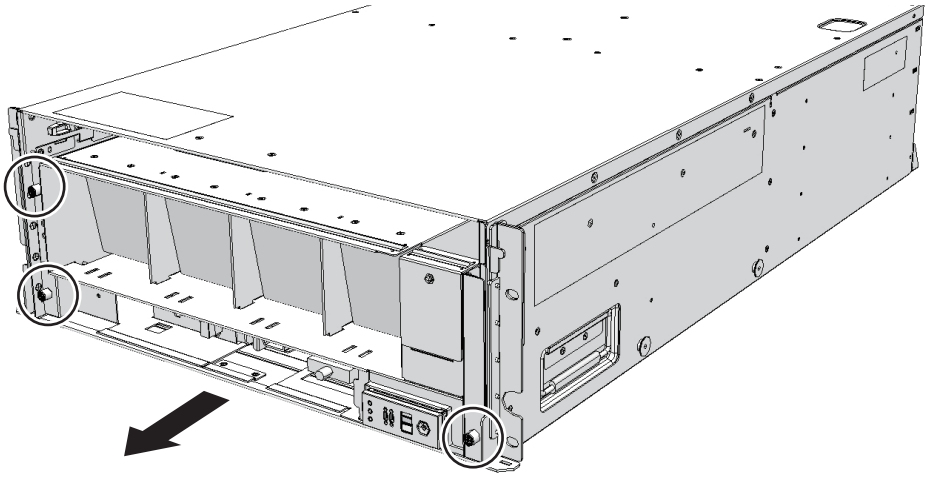
5. **Disconnect the two cables from the fan shelf.**
Arrange the removed cables in the center.

Figure 28-15 Removing the cables



6. **Loosen the three screws securing the fan shelf and partially pull out the fan shelf.**

Figure 28-16 Removing the fan shelf



7. **Place a hand under the fan shelf to support it and then carefully remove it from the chassis.**

Note - Remove the fan shelf while paying careful attention to the two cables arranged in the center.
Note - Place the removed fan shelf on a grounded antistatic ESD mat.

---

8. **Remove the cable connecting the fan backplane from the connector.**

Figure 28-17 Removing the cable (cable (PWR))

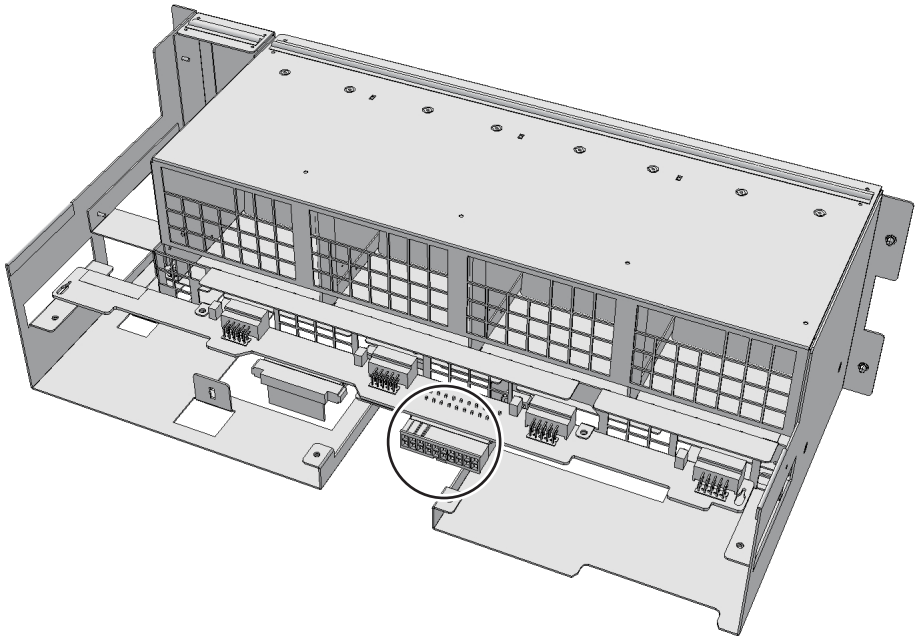
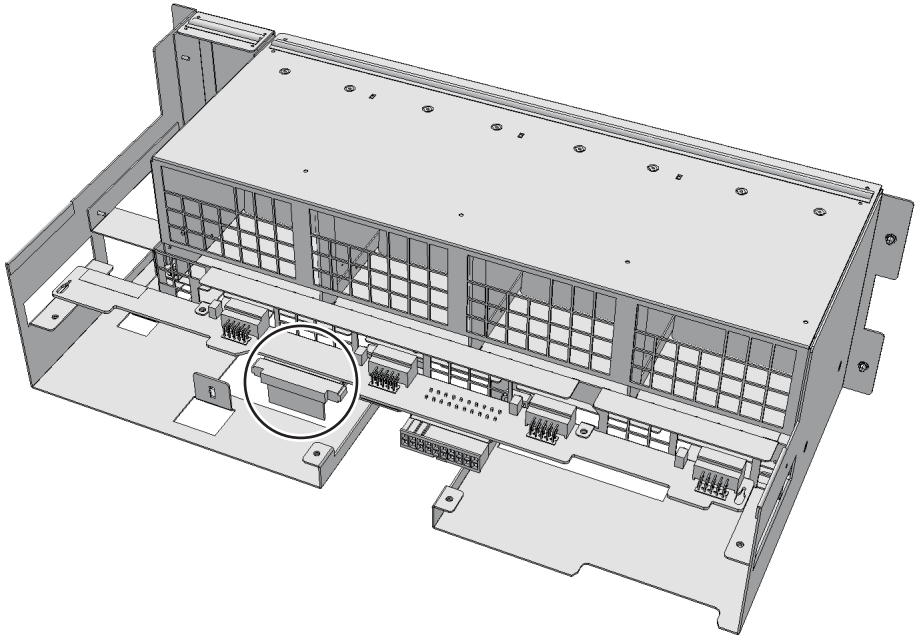


Figure 28-18 Removing the cable (cable (SIG))

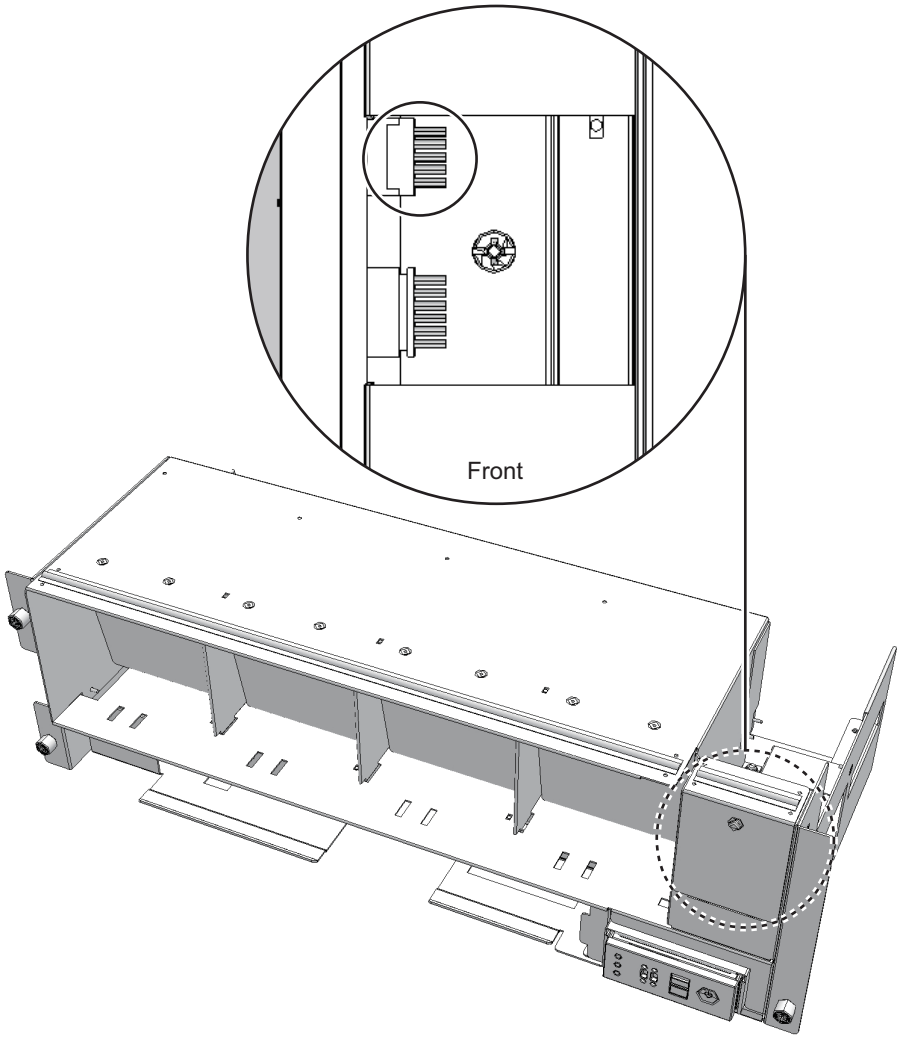


9. **Remove the cable connecting the fan shelf and operation panel from the**

connector on the operation panel.
Perform this step only when removing the cable (SIG).

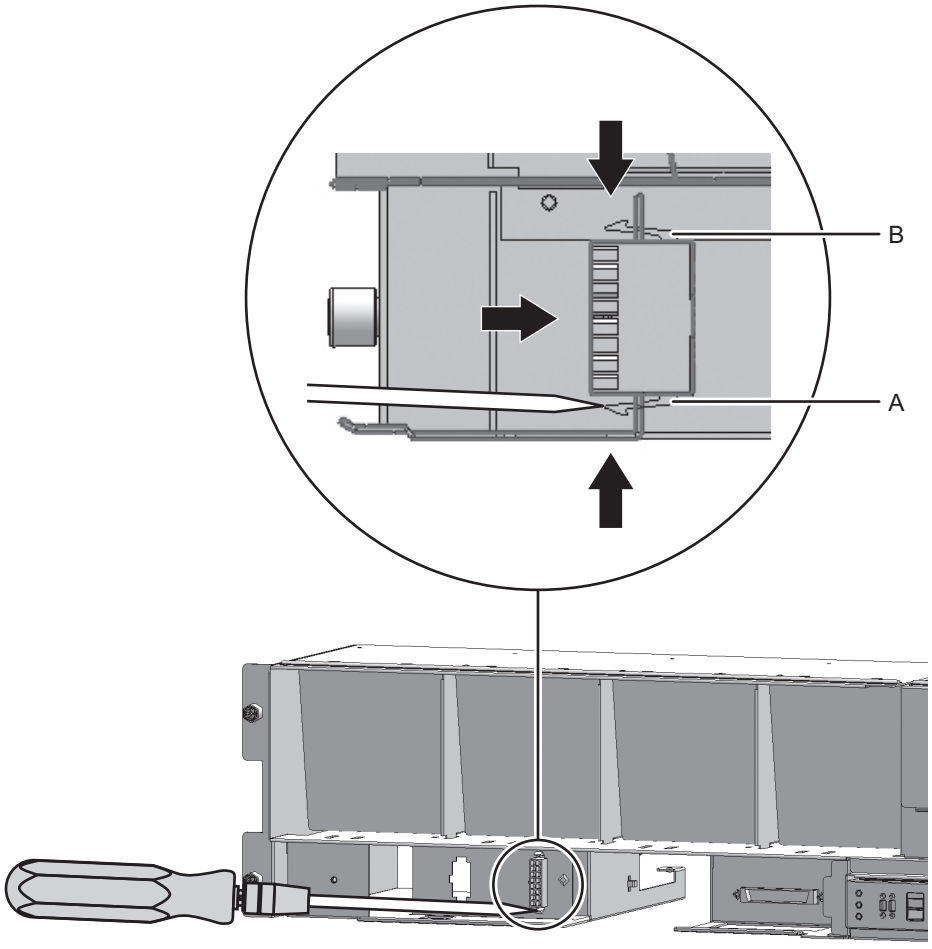
To remove the cable (PWR), proceed to step 10.

Figure 28-19 Operation panel cable



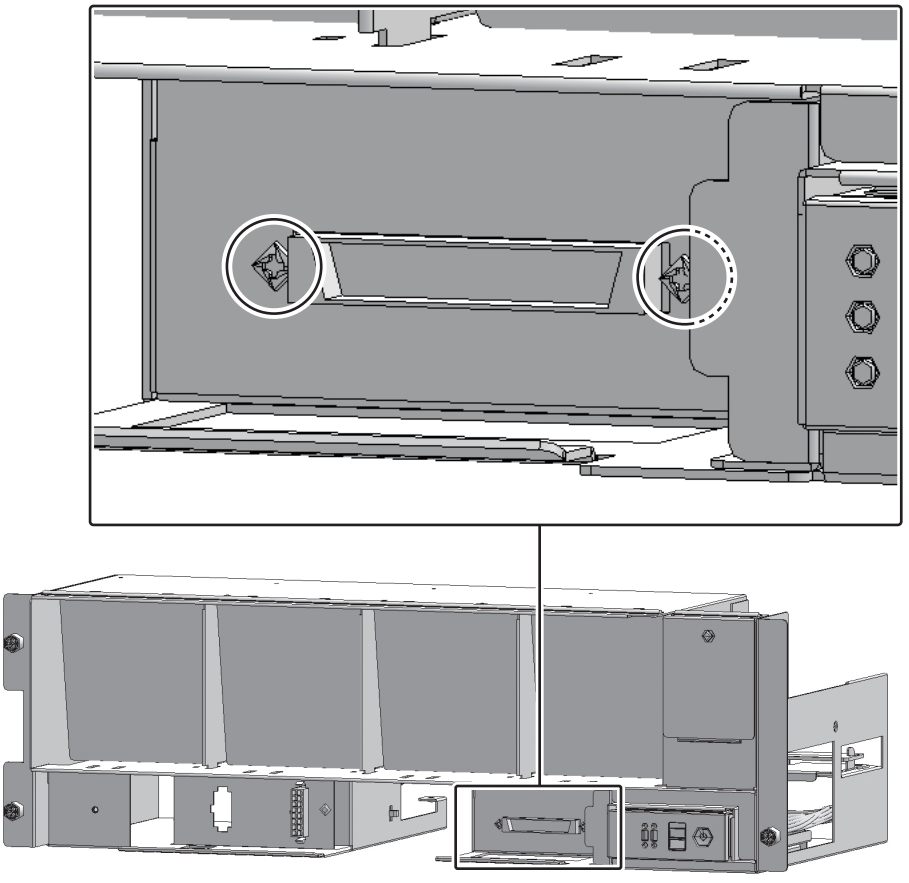
10. **Remove the cable from the terminal board.**
    - For the cable (PWR), push the connector toward the back while pushing up the lower latch (A in the figure) with a flathead screwdriver. Confirm that the lower latch (A in the figure) has been pushed to the back of the terminal board. Push the connector toward the back while pushing down the upper latch (B in the figure) with a flathead screwdriver.

Figure 28-20 Removing the cable (cable (PWR))



- For the cable (SIG), remove the two cable connector screws with a Phillips screwdriver (bit No. 1), and then remove the cable from the terminal board.

Figure 28-21 Removing the cable (cable (SIG))



11. **Remove the cable from the clamps.**

Figure 28-22 Removing the cable (cable (PWR))

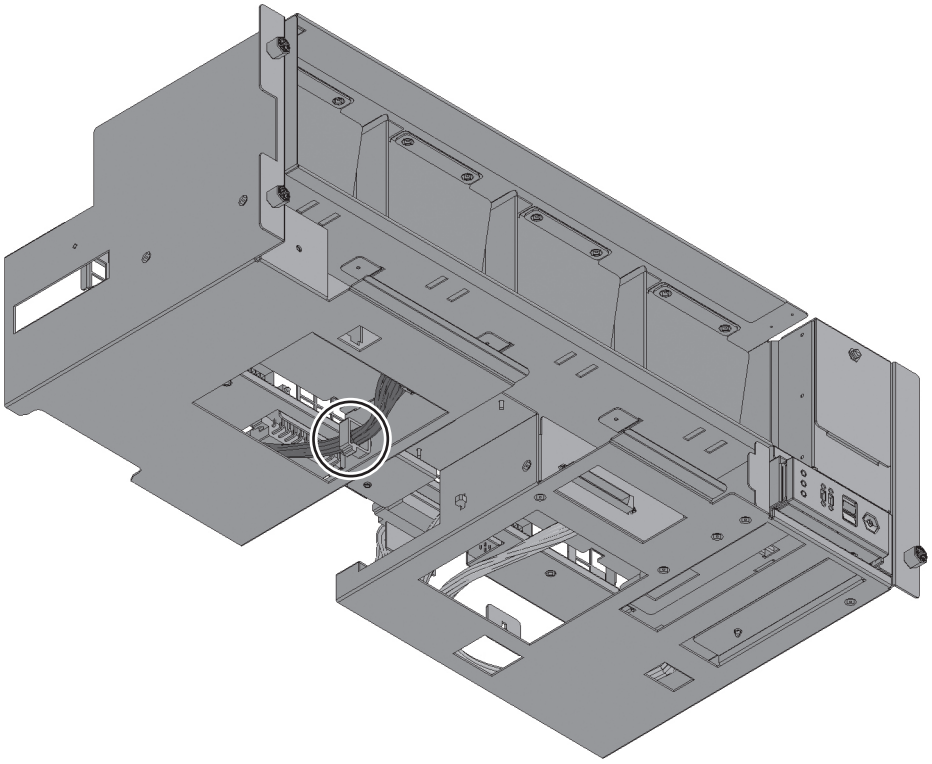
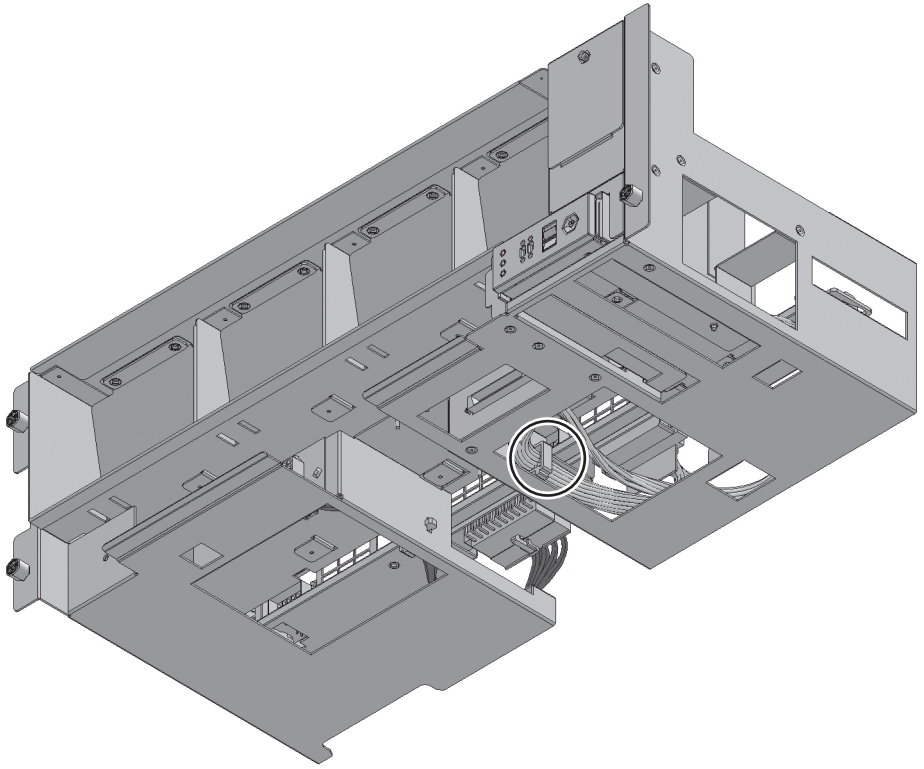


Figure 28-23 Removing the cable (cable (SIG))



28.5 Installing the Cable Kit

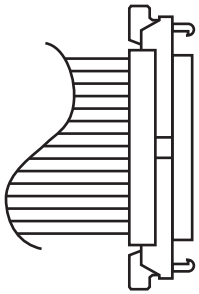
This section describes the procedure for installing the cable kit at each cable connection destination.
For the cable connection destinations, see "28.1 Configuration of the Cable Kit."
Install a cable that has the same shape as the removed cable.

28.5.1 Installing a cable between the crossbar backplane unit and terminal board

Install the cable (SIG) or cable (PWR) connecting the crossbar backplane unit and terminal board.

1. **Connect the cable to the connector of the crossbar backplane unit.**
   Install the cable that has the same shape as the removed cable.

Figure 28-24 Connector shape (cable (SIG))



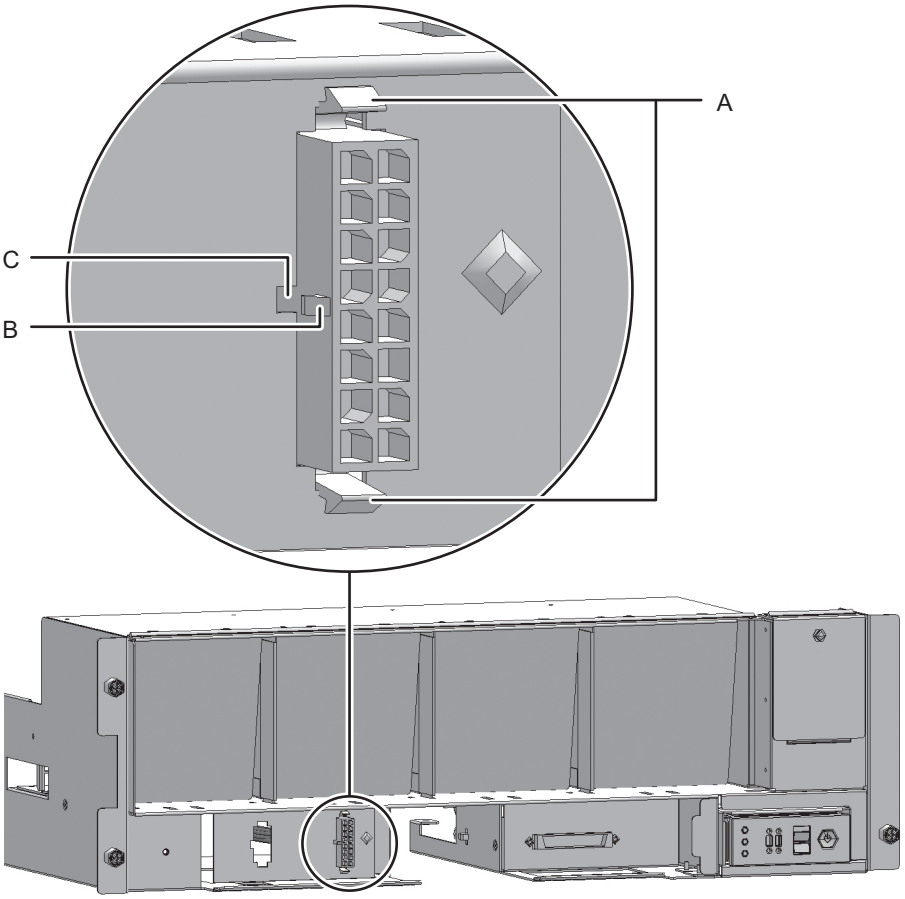
2. **Secure the cable with a clamp.**
3. **Support the fan shelf from below with one hand and then insert it carefully into the chassis.**
   Arranging the cables in the center makes it easier to install the fan shelf.
4. **Tighten the three screws securing the fan shelf.**
5. **Connect the two cables to the fan shelf.**
6. **Install the lower cover and then secure it with the one screw.**
7. **Install the upper cover.**
8. **Slide the right and left stoppers of the upper cover outwards and then secure the cover with the two screws.**
9. **Install all the fan units.**
   For details, see "19.5 Installing a Fan Unit."
10. **Install the front cover.**
    For details, see "6.5.3 Installing the front cover."

28.5.2 Installing a cable for the connection between the terminal board and fan backplane

Install the cable (SIG) or cable (PWR) connecting the terminal board and fan backplane.

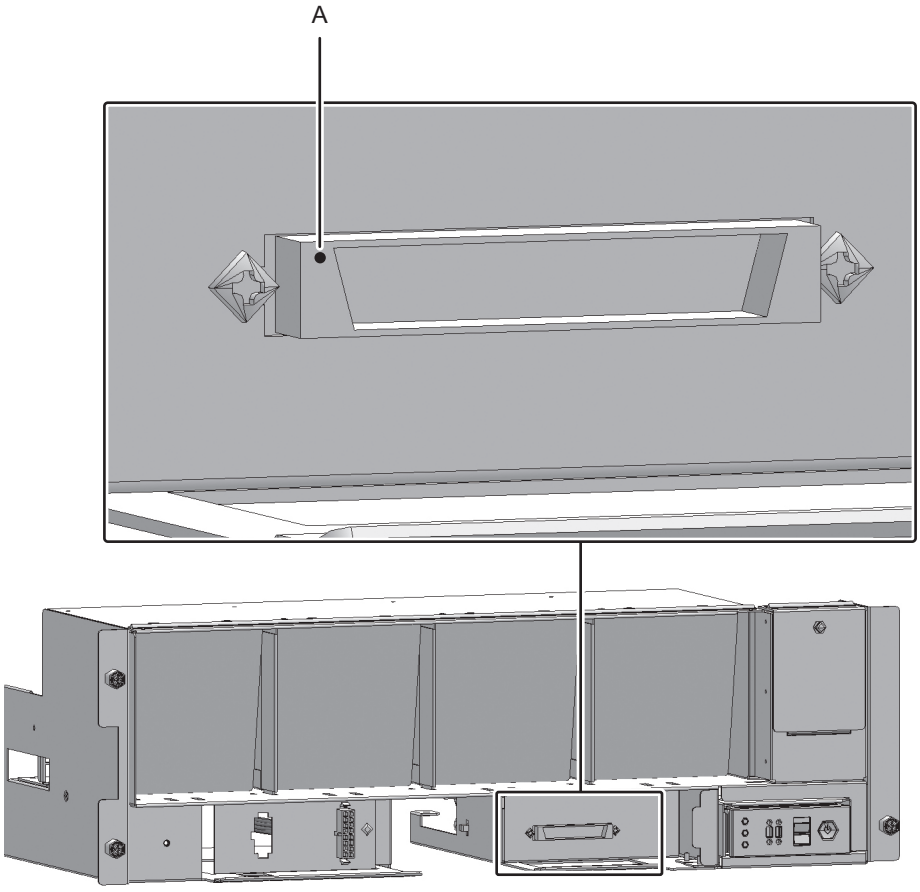
1. **Install the cable on the terminal board.**
   - For the cable (PWR), install the connector that has latches (A in the figure) on both ends to the terminal board.
     Install the tab (B in the figure) of the connector such that it fits in the notched section (C in the figure) of the terminal board.

Figure 28-25 Installing the cable (cable (PWR))



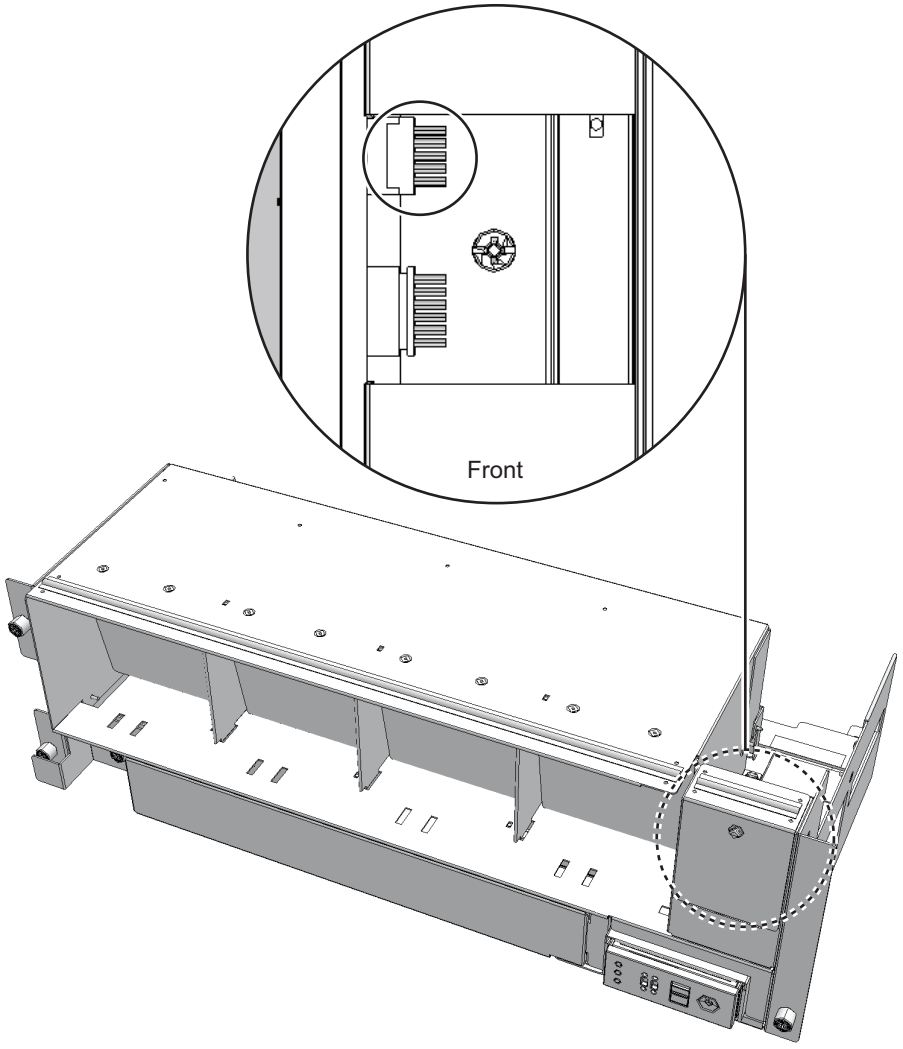
- For the cable (SIG), install the connector that has a threaded hole to the terminal board.
  Use the screw that was removed from the same location before. Tighten the screw with a Phillips screwdriver (bit No. 1). When installing the connector, orient the connector so that the dot mark (A in the figure) is on the left as shown in Figure 28-26.

Figure 28-26 Installing the cable (cable (SIG))



2. **Connect the cable to the connector of the fan backplane.**
3. **Connect the cable connecting the fan shelf and operation panel to the connector on the operation panel.**
   Perform this step only when installing the cable (SIG).
   To install the cable (PWR), proceed to step 4.

Figure 28-27 Operation panel cable



4. **Secure the cable with a clamp.**

Figure 28-28 Securing the cable (cable (PWR))

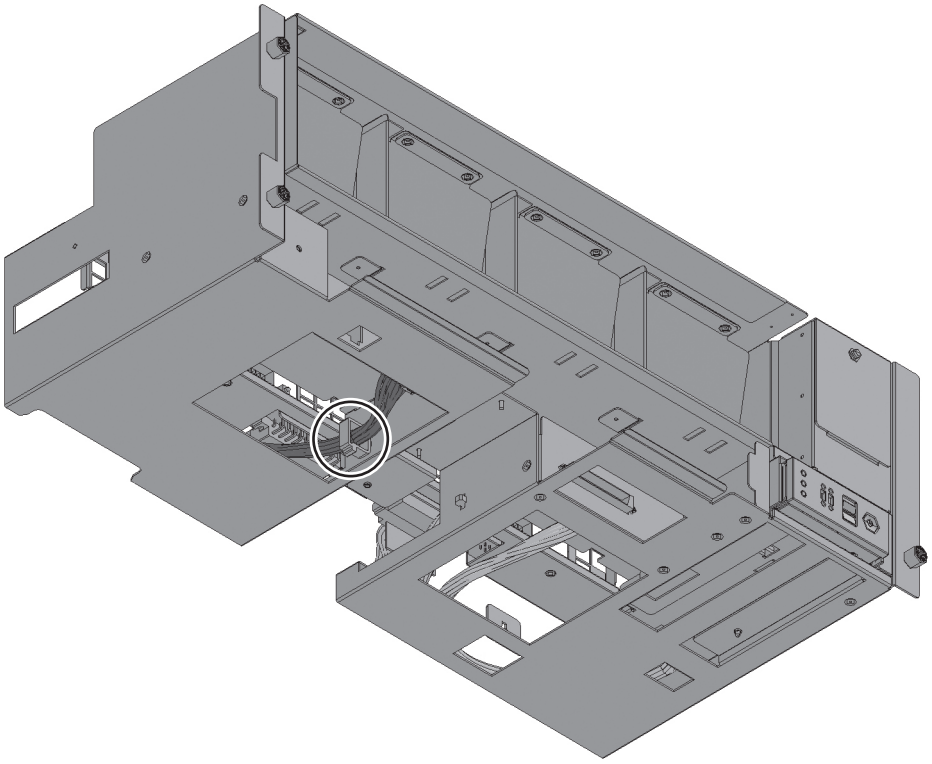
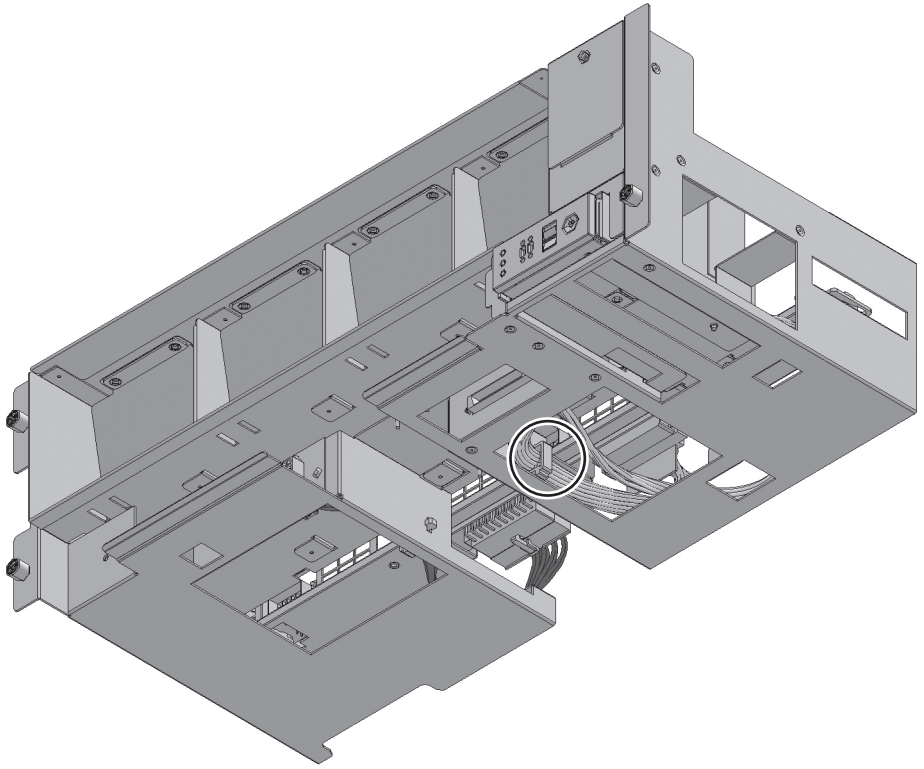


Figure 28-29 Securing the cable (cable (SIG))



5. **Support the fan shelf from below with one hand and then insert it carefully into the chassis.**
   Arranging the cables in the center makes it easier to install the fan shelf.
6. **Tighten the three screws securing the fan shelf.**
7. **Connect the two cables to the fan shelf.**
8. **Install the lower cover and then secure it with the one screw.**
9. **Install the upper cover.**
10. **Slide the right and left stoppers of the upper cover outwards and then secure the cover with the two screws.**
11. **Install all the fan units.**
    For details, see "19.5 Installing a Fan Unit."
12. **Install the front cover.**
    For details, see "6.5.3 Installing the front cover."

28.6 Restoring the System

This section describes the procedure for restoring the system after installing the cable kit.

1. **Connect all the power cords to the power supply unit of the crossbar box requiring maintenance.**
   For details, see "6.5.1 Installing the power cord."

Note - In the case of a dual power feed, connect the power cords in their original positions by referring to the record that you made before the start of maintenance.

---

2. **Return to the operation of the XSCF firmware replacefru command to confirm that the crossbar backplane unit has been incorporated into the system.**
   For details, see "6.1 Incorporating an FRU into the System with the replacefru Command."

3. **Execute the diagxbu command to diagnose the crossbar cables.**
   - **When the system board of the chassis connected with the crossbar cables is not incorporated into the physical partition, or when the incorporated physical partition is powered off:**

     The example below specifies the following:
     00: The BB-ID of the chassis to start the diagnosis
     01: The BB-ID of the destination where the chassis to start the diagnosis is connected (You can specify more than one of these.)
     To specify multiple connection destination BB-IDs, enter a command like "diagxbu -y -b 00 -t 01 -t 02".

```
XSCF> diagxbu -y -b 00 -t 01
```

   - **When the system board of the chassis connected with the crossbar cables is incorporated into the physical partition, and the physical partition is powered on:**

     The example below specifies the following:
     00: The BB-ID of the chassis to start the diagnosis
     02: The PPAR-ID of the destination where the chassis to start the diagnosis is connected (You can specify only one of these.)

```
XSCF> diagxbu -y -b 00 -p 02
```

4. **Execute the showlogs command to confirm that the system is operating normally.**

```
XSCF> showlogs error
```

For details, see "3.3.5 Checking log information."

5. **Power on all the physical partitions.**
   For details, see "6.3 Powering On the Physical Partition Requiring Maintenance."
6. **Close the rack door.**

Chapter 29

Maintaining the Dedicated Power Distribution Unit Mounted on the Rack for Expanded Connection

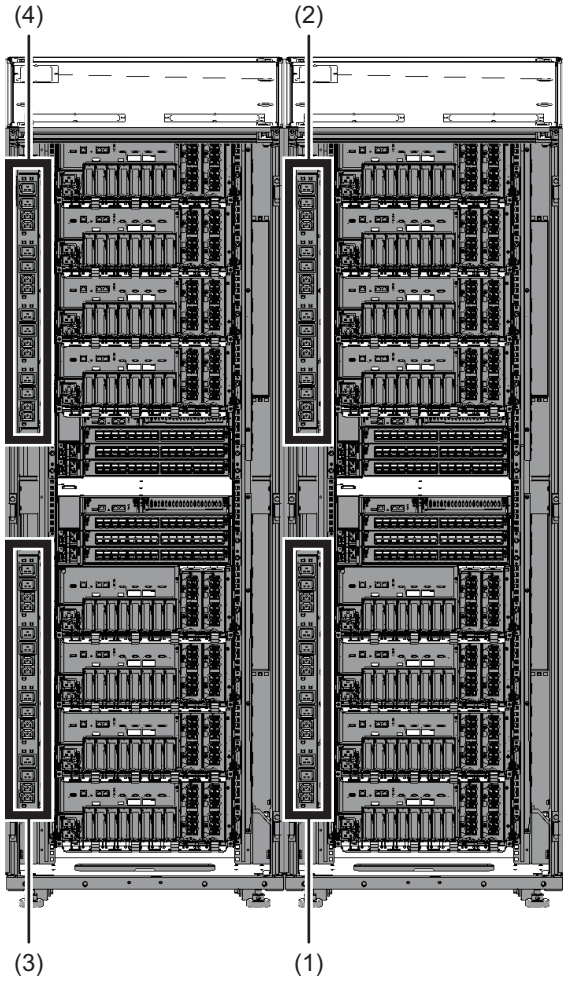
This chapter describes the procedure for maintaining the dedicated power distribution unit (PDU) mounted on the rack for expanded connection.

- Configuration of the Dedicated Power Distribution Unit
- Before Maintaining the Dedicated Power Distribution Unit
- Enabling the Removal of the Dedicated Power Distribution Unit
- Removing the Dedicated Power Distribution Unit
- Installing the Dedicated Power Distribution Unit
- Restoring the System

29.1 Configuration of the Dedicated Power Distribution Unit

This section describes the configuration and location of the PDU.
The PDU is installed on the rack for expanded connection. It is compatible with both single- and three-phase power feeds.

Figure 29-1 Location of the PDU



Location number	Component
1	Dedicated power distribution unit (PDU#0)
2	Dedicated power distribution unit (PDU#1)
3	Dedicated power distribution unit (PDU#2) (*)
4	Dedicated power distribution unit (PDU#3) (*)

*: This is mounted when the two expanded connection racks have been installed.

29.2 Before Maintaining the Dedicated Power Distribution Unit

This section describes the types and flow of maintenance of the PDU, as well as some precautions.

Note - Read and understand the instructions in this chapter before starting the maintenance work. Also see the contents of "Chapter 1 Before Starting Maintenance Work."

29.2.1 Types of maintenance

Table 29-1 lists the types of maintenance for the PDU. For the definition of maintenance, see "4.3 Understanding Types of Maintenance."

Table 29-1 Types of PDU maintenance

Configuration	Active/hot	Active/cold	Inactive/hot	Inactive/cold	System stopped
Building block configuration	Unsupported	Supported	Unsupported	Unsupported	Supported

29.2.2 Maintenance flow

Table 29-2 lists the sequence of the maintenance procedure for the PDU.

Table 29-2 Maintenance flow

Task		Replacement
1	Preparation	29.3
2	Removing the PDU	29.4
3	Installing the PDU	29.5
4	Restoring the system	29.6

29.2.3 Precautions for replacement

Note the following points when you replace a PDU.

- The SPARC M10-4S and the crossbar box are connected to the two PDUs with power cords. Thus the system can continue to operate even if one of the PDUs fails. Do not, however, operate the system for an extended period when one unit

has failed.

- When replacing multiple PDUs, replace one unit at a time. If redundancy of the PDUs cannot be preserved, then system-stopped maintenance must be performed.

29.3 Enabling the Removal of the Dedicated Power Distribution Unit

This section describes the preparations that must be completed prior to removing a PDU. The preparation procedure differs depending on the maintenance type as follows:

- Active/Cold maintenance
- System-stopped maintenance

29.3.1 Active/Cold maintenance

Caution - Active/cold maintenance can be performed only when the power supply unit has a redundant configuration.

1. **Open the rack door.**
2. **Disconnect all the power cords of the SPARC M10-4S and crossbar boxes from the PDU requiring maintenance.**

Note - Make a note of the locations of the power cords before disconnecting them, to ensure that they are reconnected correctly.

29.3.2 System-stopped maintenance

1. **Open the rack door.**
2. **Stop the entire system.**
   For details, see "5.4 Stopping the Entire System."
3. **Disconnect all the power cords of the SPARC M10-4S and crossbar boxes from the PDU requiring maintenance.**

Note - Make a note of the locations of the power cords before disconnecting them, to ensure that they are reconnected correctly.

29.4 Removing the Dedicated Power Distribution Unit

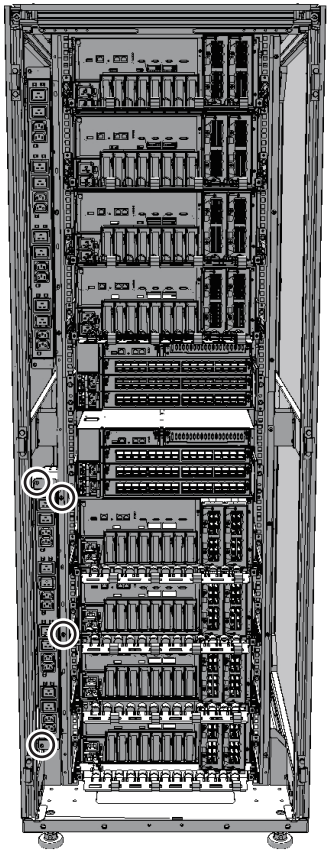
This section describes the procedure for removing the dedicated power distribution unit.
Enable the removal of the dedicated power distribution unit before attempting to remove it. For details, see "29.3 Enabling the Removal of the Dedicated Power Distribution Unit."

Caution - Before you handle any components, wear a wrist strap to ground any static electricity. If you perform this procedure without a wrist strap, individual components or the overall system may be damaged. For details, see "1.5 Notes Regarding Static Electricity."

Caution - Two people must be present when the power cables are to be removed. If you perform this work alone, you may injure yourself or cause damage to the PDU because the PDU is heavy.

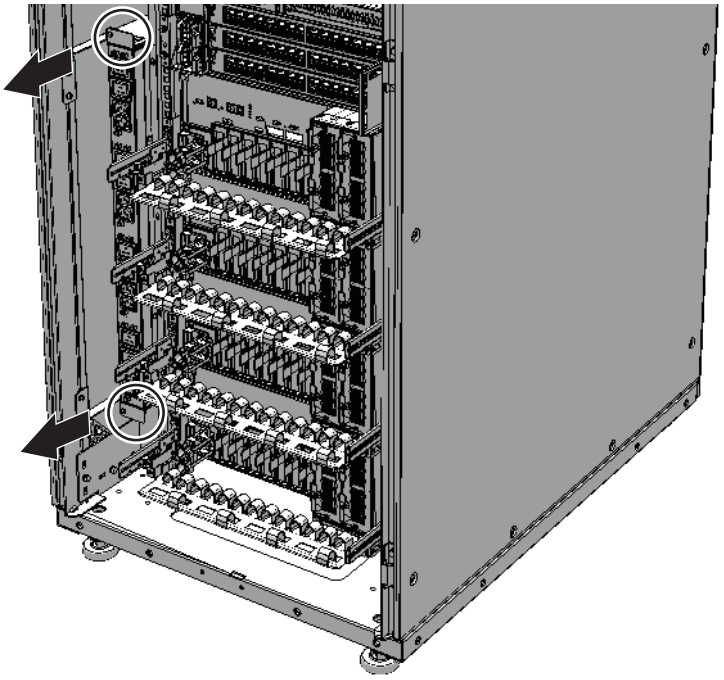
1. **Remove the four PDU screws.**

Figure 29-2 PDU screws



2. **Grasp the top and bottom of the PDU, and then pull it out.**

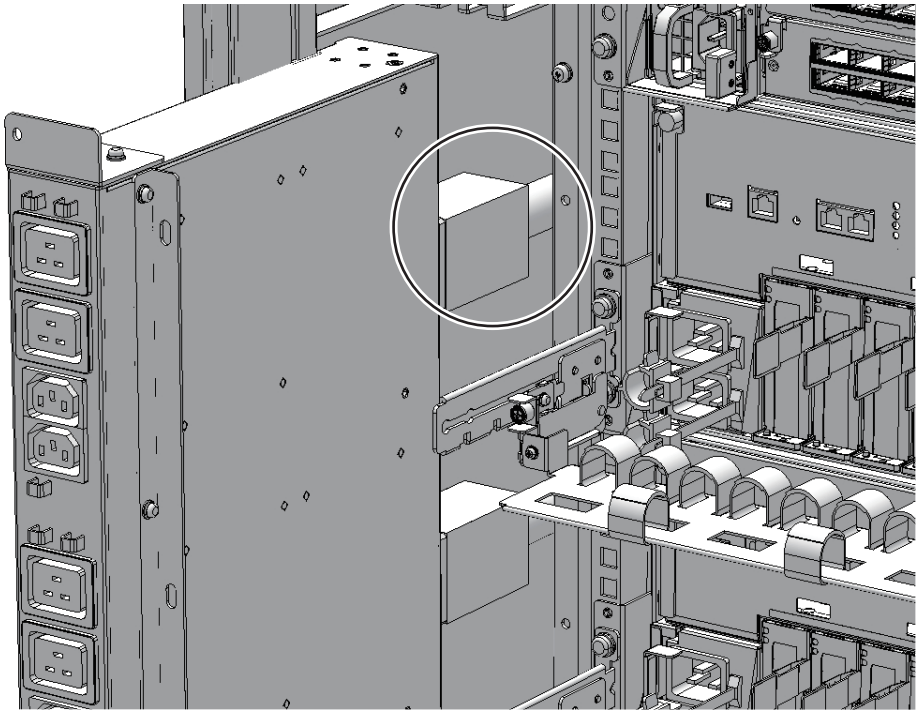
Figure 29-3 Pulling out the PDU



3. **Disconnect all the power cables from the rear of the PDU.**

Note - Hold the plugs of the power cables, and then pull them straight out.

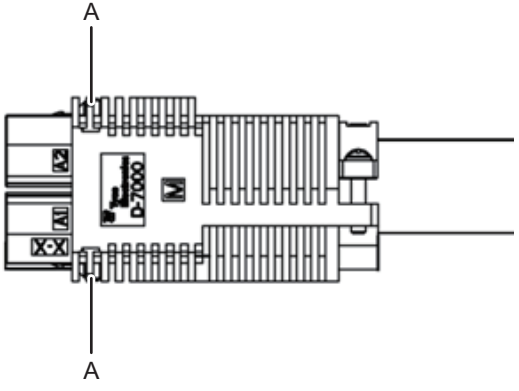
Figure 29-4 PDU power cables



The number of power cables and the plug type may vary depending on the power environment, as follows:

- **For a single-phase power feed:**
  Four power cables are connected to the PDU. To pull them out, push the upper and lower latches (A in the figure).

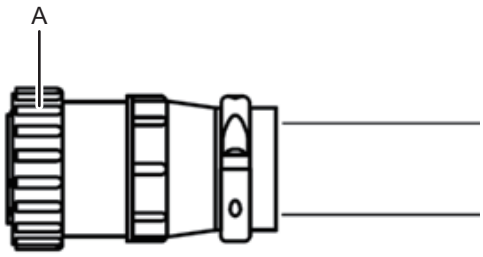
Figure 29-5 Power cable connector for single-phase power feed



- **For a three-phase power feed:**
  Three power cables are connected to the PDU. To pull them out, turn the ring

(A in the figure) counterclockwise.

Figure 29-6 Power cable connector for three-phase power feed



29.5 Installing the Dedicated Power Distribution Unit

This section describes the procedure for installing a PDU.

1. **Connect all the power cables to the rear of the PDU.**

Note - Hold each power cable plug, and then insert it straight into the socket.

- **For a single-phase power feed:**
  Connect four power cables to the PDU.
- **For a three-phase power feed**
  Connect three power cables to the PDU. Install each power cable by holding its plug, and then secure it by turning the ring clockwise.

Note - Ensure that the power cables are correctly connected and secure.

2. **Install the PDU into the rack for expanded connection.**
3. **Install the four PDU screws.**

29.6 Restoring the System

This section describes the procedure for restoring the system after installing the PDU. The restoration procedure differs depending on the maintenance type as follows:

- Active/Cold maintenance

■ System-stopped maintenance

29.6.1 Active/Cold maintenance

1. **Connect all the power cords of the SPARC M10-4S and crossbar boxes to the PDU requiring maintenance.**

Note - Reconnect the power cords at their original locations by referring to the notes you made prior to the start of maintenance.

---

2. **Close the rack door.**

29.6.2 System-stopped maintenance

1. **Connect all the power cords of the SPARC M10-4S and crossbar boxes to the PDU requiring maintenance.**

Note - Reconnect the power cords at their original locations by referring to the notes you made prior to the start of maintenance.

---

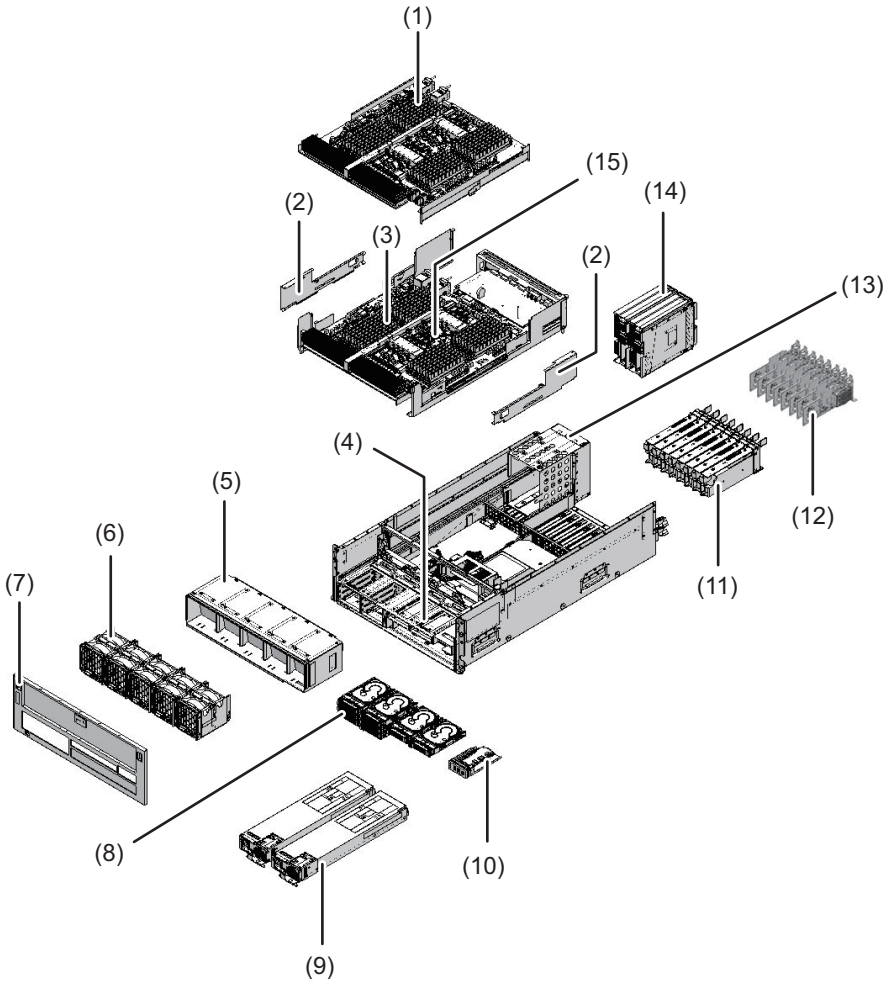
2. **Start the entire system.**
   For details, see "6.4 Starting the Entire System."
3. **Close the rack door.**

Appendix A

Component List

This appendix describes components that constitute the SPARC M10-4/M10-4S, the crossbar box, and the expanded connection rack.

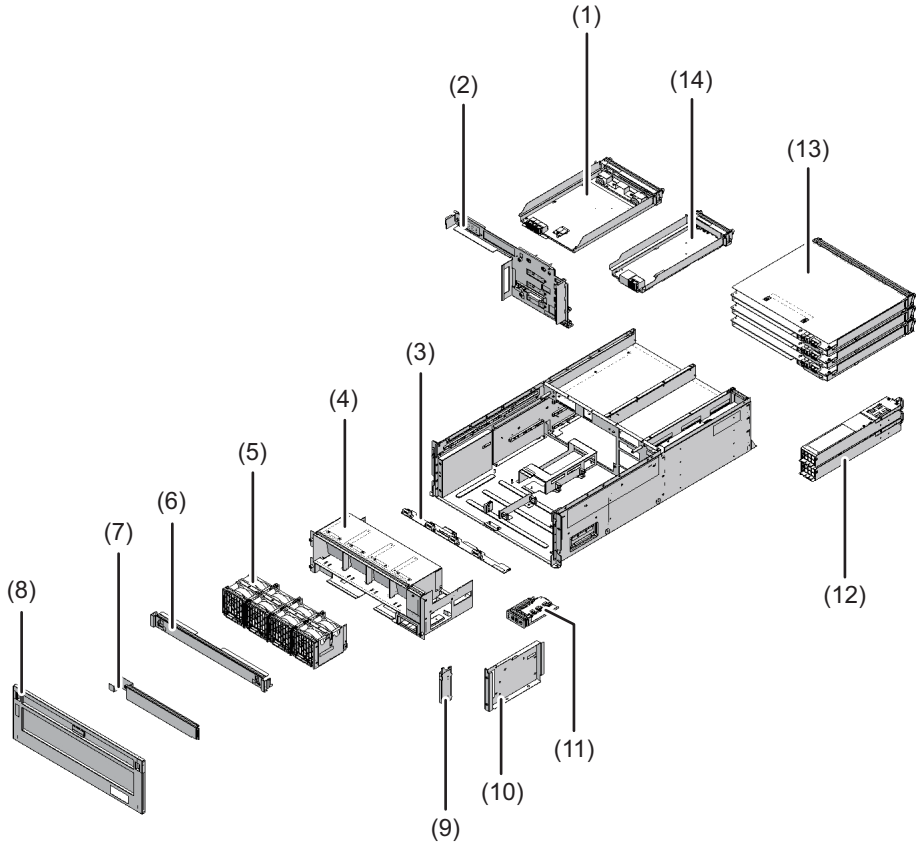
Figure A-1 Locations of components of SPARC M10-4/M10-4S



Location number	Component
1	CPU memory unit upper
2	Side cover
3	Memory
4	PSU backplane unit
5	Fan shelf
6	Fan unit
7	Front cover
8	Internal disk
9	Power supply unit
10	Operation panel
11	PCI Express card cassette
12	PCI Express card
13	Crossbar unit mounting frame (*)
14	Crossbar unit (*)
15	CPU memory unit lower

*: Not mounted on SPARC M10-4.

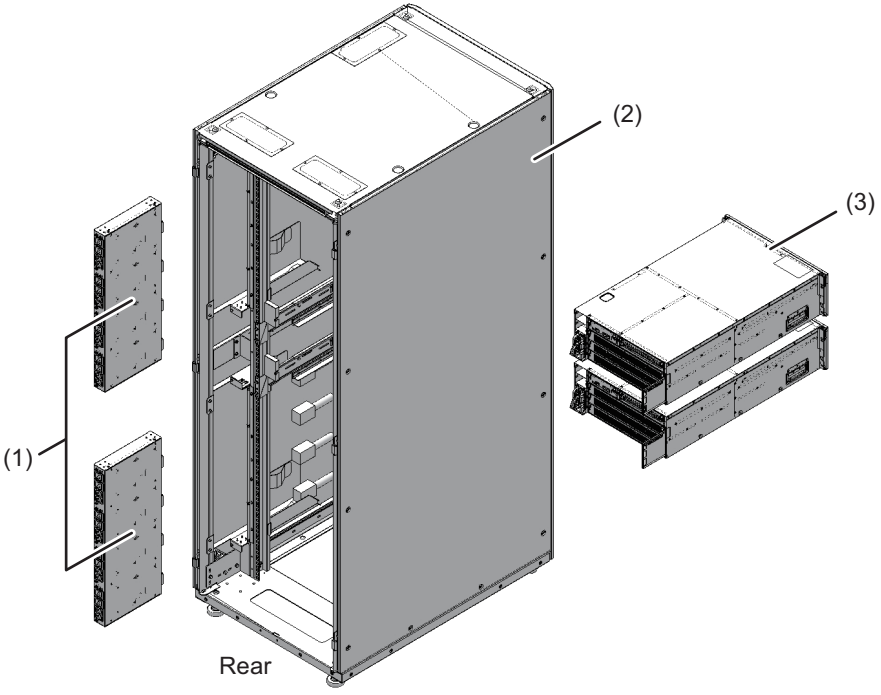
Figure A-2 Locations of components of crossbar box



Location number	Component
1	XSCF interface unit
2	Crossbar backplane unit
3	Fan backplane
4	Fan shelf
5	Fan unit
6	Upper cover
7	Lower cover
8	Front cover
9	Guide plate fixing bracket
10	Guide plate
11	Operation panel
12	Power supply unit
13	Crossbar unit

Location number	Component
14	XSCF unit

Figure A-3 Locations of components of expanded connection rack



Location number	Component
1	Dedicated power distribution unit
2	Expanded connection rack
3	Crossbar box

Appendix B

Component Specifications

This appendix provides the specifications of the components.
The components that constitute the SPARC M10-4/M10-4S and the crossbar box are as follows.

Components that constitute the SPARC M10-4/M10-4S

- CPU Memory Unit
- Crossbar Unit
- Power Supply Unit
- Fan Unit
- Internal Disk Drive
- PCI Express Card
- Backplanes
- Operation Panel

Components that constitute the crossbar box

- Crossbar Unit
- XSCF Unit
- XSCF Interface Unit
- Power Supply Unit
- Fan Unit
- Backplanes
- Operation Panel

B.1 CPU Memory Unit

The CPU memory unit of the SPARC M10-4/M10-4S consists of two units: the upper

unit and lower unit.
The CPU memory unit lower consists of the following components.

- CPU
- Memory
- XSCF
- PCI Express (PCIe) backplane

The CPU memory unit upper consists of the following components.

- CPU
- Memory

CPU and XSCF are directly installed on the CPU memory unit. Thus you cannot replace the CPU and XSCF individually.
Each CPU memory unit upper and CPU memory unit lower is available in eight different types based on the combination of CPU type and the number of memory slots.
Table B-1 lists the specifications of the CPU memory unit.

Table B-1 Specifications of CPU memory unit (SPARC M10-4/M10-4S)

Item	Description
Maximum number of CPU memory units	2
Location	Inside of chassis
Type of maintenance	Active/cold, inactive/cold, and system stopped
Maintenance category	Replacement, expansion, and reduction

For the maintenance procedure, see "Chapter 7 Maintaining the CPU Memory Units."

B.2 Crossbar Unit

The crossbar units of the SPARC M10-4S and the crossbar box are crossbar switches that logically connect the CPU memory unit and I/O unit. The crossbar unit has two operation modes. One is normal mode that provides 2-way operation. The other is degraded mode that provides 1-way operation, which is half of normal mode.
Table B-2 and Table B-3 list the specifications of the crossbar units of the SPARC M10-4S and the crossbar box, respectively.

Table B-2 Specifications of crossbar unit (SPARC M10-4/M10-4S)

Item	Description
Number of crossbar units	2
Location	Rear of chassis

Table B-2 Specifications of crossbar unit (SPARC M10-4/M10-4S) *(continued)*

Item	Description
Type of maintenance	Inactive/cold and system-stopped
Maintenance category	Replacement

Table B-3 Specifications of crossbar unit (crossbar box)

Item	Description
Number of crossbar units	3
Location	Rear of chassis
Type of maintenance	System stopped
Maintenance category	Replacement

See the following chapters for details of the maintenance procedures:
SPARC M10-4S: Chapter 9 Maintaining the Crossbar Units
Crossbar box: Chapter 16 Maintaining the Crossbar Units of the Crossbar Box

B.3 XSCF Unit

The XSCF unit of the crossbar box is a control unit that is central to the system. The functions of an XSCF are as follows:

- Controlling each unit
- Console function for each physical partition that uses the TTY communication protocol
- Communication with each physical partition that uses a command interface
- Managing system information
- Browser-based user interface function
- Connection with a maintenance terminal
- Next remote chassis interface
- System power control and cluster control that use a power supply interlocking function

Table B-4 lists the specifications of the XSCF unit of the crossbar box.

Table B-4 Specifications of XSCF unit (crossbar box)

Item	Description
Number of XSCF units	1
Location	Rear of chassis
Type of maintenance	Active/hot, inactive/hot, and system stopped

Table B-4 Specifications of XSCF unit (crossbar box) *(continued)*

Item	Description
Maintenance category	Replacement

For the maintenance procedure, see "Chapter 17 Maintaining the XSCF Unit of the Crossbar Box."

B.4 Power Supply Unit

The power supply units of the SPARC M10-4/M10-4S and the crossbar box take power from the input power and supply it to the system. The redundant configuration of the power supply units allows the system to continue operating even if one of the units fails during operation.
Table B-5 and Table B-6 list the specifications of the power supply units of the SPARC M10-4/M10-4S and the crossbar box, respectively.

Table B-5 Specifications of the power supply unit (SPARC M10-4/M10-4S)

Item	Description
Number of power supply units	2
Location	Front of chassis
Type of maintenance	Active/hot, active/cold, inactive/hot, inactive/cold, and system stopped
Maintenance category	Replacement

Table B-6 Specifications of power supply unit (crossbar box)

Item	Description
Number of power supply units	2
Location	Rear of chassis
Type of maintenance	Active/hot, inactive/hot, and system stopped
Maintenance category	Replacement

See the following chapters for details of the maintenance procedures:
SPARC M10-4/M10-4S: Chapter 10 Maintaining the Power Supply Units
Crossbar box: Chapter 18 Maintaining the Power Supply Units of the Crossbar Box

B.5 Fan Unit

Five fan units are mounted on the SPARC M10-4/M10-4S and four on the crossbar box. They provide a flow of air to cool the inside of the chassis. Each fan unit has two cooling fans.
Table B-7 and Table B-8 list the specifications of the fan units of the SPARC M10-4/M10-4S and the crossbar box, respectively.

Table B-7 Specifications of fan unit (SPARC M10-4/M10-4S)

Item	Description
Number of fan units	5
Location	Front of chassis
Type of maintenance	Active/hot, active/cold, inactive/hot, inactive/cold, and system stopped
Maintenance category	Replacement

Table B-8 Specifications of fan unit (crossbar box)

Item	Description
Number of fan units	4
Location	Front of chassis
Type of maintenance	Active/hot, inactive/hot, and system stopped
Maintenance category	Replacement

See the following chapters for details of the maintenance procedures:
SPARC M10-4/M10-4S: Chapter 11 Maintaining the Fan Units
Crossbar box: Chapter 19 Maintaining the Fan Units of the Crossbar Box

B.6 Internal Disk Drive

Up to eight hard disks or solid state disks can be mounted as internal disks on SPARC M10-4/M10-4S.
Table B-9 lists the specifications of the internal disk drive.

Table B-9 Specifications of the internal disk drive (SPARC M10-4/M10-4S)

Item	Description
Maximum number of internal disk drives	8
Interface	SAS

Table B-9 Specifications of the internal disk drive (SPARC M10-4/M10-4S) *(continued)*

Item	Description
Location	Front of chassis
Type of maintenance	Active/hot, active/cold, inactive/hot, inactive/cold, and system stopped
Maintenance category	Replacement, expansion, and reduction

For the maintenance procedure, see "Chapter 12 Maintaining the Internal Disks."

B.7 PCI Express Card

Up to eight PCIe cards can be mounted in a SPARC M10-4S with a crossbar unit mounted. For a SPARC M10-4 with no crossbar unit mounted, up to 11 PCIe cards can be mounted.
Table B-10 lists the specifications of the PCIe card.

Table B-10 Specifications of PCIe card (SPARC M10-4/M10-4S)

Item	Description
Maximum number of PCIe cards	11 (*)
Location	Rear of chassis
Type of maintenance	Active/hot, inactive/hot, and system stopped
Maintenance category	Replacement, expansion, and reduction

*: Can be mounted only on a SPARC M10-4.

For the maintenance procedure, see "Chapter 13 Maintaining the PCI Express Cards."

B.8 XSCF Interface Unit

The XSCF interface unit of the crossbar box mounts the identification information. The XSCF interface unit and each of the other units are connected by the crossbar backplane unit.
Table B-11 lists the specifications of the XSCF interface unit of the crossbar box.

Table B-11 Specifications of XSCF interface unit (crossbar box)

Item	Description
Number of XSCF interface units	1

Table B-11 Specifications of XSCF interface unit (crossbar box) *(continued)*

Item	Description
Location	Rear of chassis
Type of maintenance	System stopped
Maintenance category	Replacement

For the maintenance procedure, see "Chapter 20 Maintaining the XSCF Interface Unit of the Crossbar Box."

B.9 Backplanes

The backplanes of the SPARC M10-4/M10-4S and the crossbar box have connectors for connecting replaceable units in the chassis. The PSU backplane unit of SPARC M10-4/M10-4S mounts the memory that stores the identification information and the user setting information.

The backplane of the SPARC M10-4/M10-4S is shown below.

- PSU backplane unit (A in the figure)

Figure B-1 Location of backplane of SPARC M10-4/M10-4S

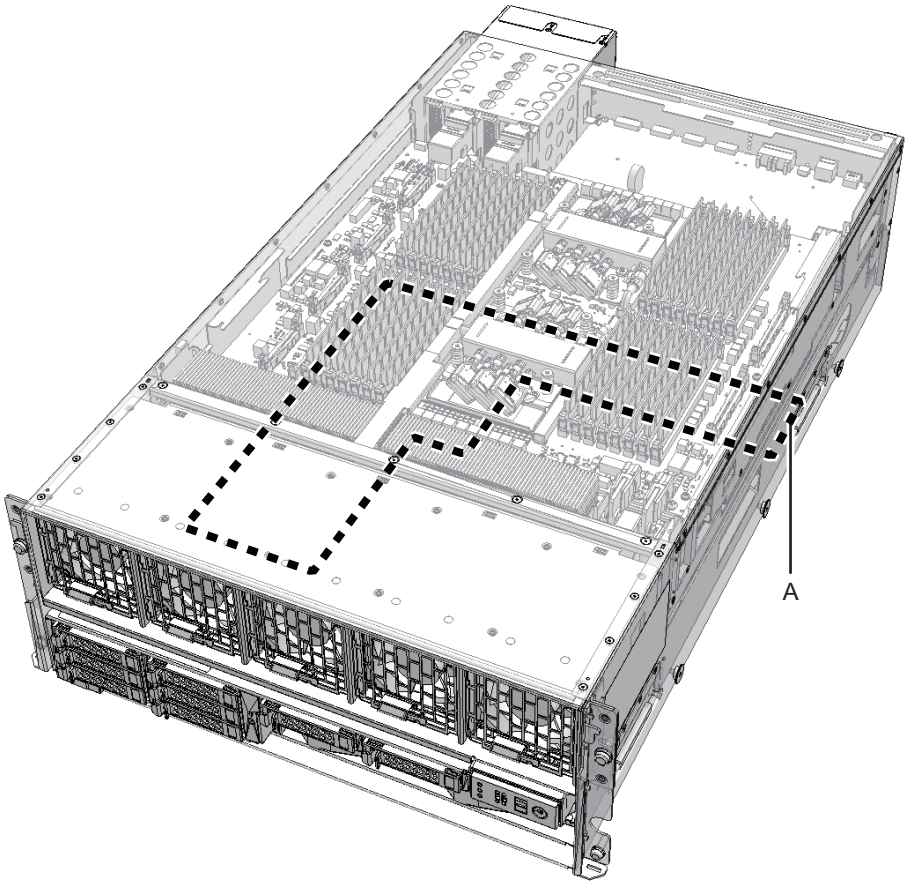


Table B-12 lists the specifications of the PSU backplane unit.

Table B-12 Specifications of PSU backplane unit (SPARC M10-4/M10-4S)

Item	Description
Number of PSU backplane units	1
Location	Inside of chassis
Type of maintenance	Active/cold, inactive/cold, and system stopped
Maintenance category	Replacement

For the maintenance procedure, see "Chapter 14 Maintaining the PSU Backplane Unit."

The backplanes of the crossbar box are shown below.

- Crossbar backplane unit (A in the figure)
- Fan backplane (B in the figure)

Figure B-2 Locations of backplanes of crossbar box

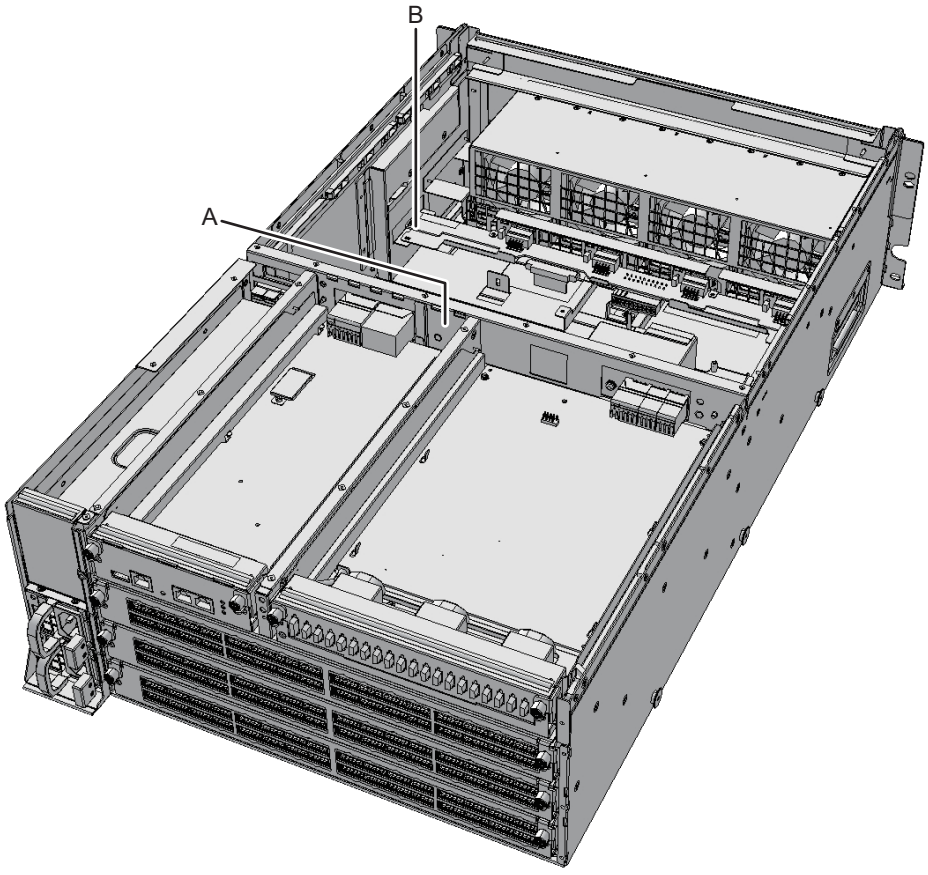


Table B-13 and Table B-14 list the specifications of the crossbar backplane and the fan backplane units, respectively.

Table B-13 Specifications of crossbar backplane unit (crossbar box)

Item	Description
Number of crossbar backplane units	1
Location	Inside of chassis
Type of maintenance	System stopped
Maintenance category	Replacement

Table B-14 Specifications of fan backplane (crossbar box)

Item	Description
Number of fan backplanes	1

Table B-14 Specifications of fan backplane (crossbar box) *(continued)*

Item	Description
Location	Inside of chassis
Type of maintenance	System stopped
Maintenance category	Replacement

See the following chapters for details of the maintenance procedures:
Crossbar backplane unit of crossbar box: Chapter 21 Maintaining the Crossbar Backplane Unit of the Crossbar Box
Fan backplane of crossbar box: Chapter 22 Maintaining the Fan Backplane of the Crossbar Box

B.10 Operation Panel

The operation panels of the PARC M10-4/M10-4S and the crossbar box are installed in the front of the chassis. This panel displays the system status and is used for operation.
Table B-15 and Table B-16 list the specifications of the operation panels of the SPARC M10-4/M10-4S and the crossbar box, respectively.

Table B-15 Specifications of operation panel (SPARC M10-4/M10-4S)

Item	Description
Number of operation panels	1
Location	Front of chassis
Type of maintenance	Active/cold, inactive/cold, and system stopped
Maintenance category	Replacement

Table B-16 Specifications of operation panel (crossbar box)

Item	Description
Number of operation panels	1
Location	Front of chassis
Type of maintenance	System stopped
Maintenance category	Replacement

See the following chapters for details of the maintenance procedures:
SPARC M10-4/M10-4S: Chapter 15 Maintaining the Operation Panel
Crossbar box: Chapter 23 Maintaining the Operation Panel of the Crossbar Box

Appendix C

Oracle Solaris Troubleshooting Commands

This appendix describes how to use Oracle Solaris commands to display fault diagnosis information and to take countermeasures. The commands listed here are useful for determining whether there are problems in the system, the network, or some other system connected through the network.

- iostat(1M) Command
- prtdiag(1M) Command
- prtconf(1M) Command
- netstat(1M) Command
- ping(1M) Command
- ps(1) Command
- prstat(1M) Command

C.1 iostat(1M) Command

The iostat(1M) command periodically reports the CPU usage status, as well as the terminal status, the drive status, and the I/O status.
Table C-1 lists the options of the iostat(1M) command and how those options can be applied to solving system issues.

Table C-1 iostat(1M) command options

Option	Description	Application
No options	Reports the status of the local I/O device.	Allows you to view the device status concisely in 3 lines.
-c	Reports the rates of periods during which the system has been in user mode, system mode, I/O waiting, and idling.	Allows you to view the CPU status as a concise report.

Table C-1 iostat(1M) command options *(continued)*

Option	Description	Application
-e	Displays a summary of statistics on the device errors. Displayed items are the total number of errors, hardware errors, software errors, and transfer errors.	Allows you to view the accumulated number of errors as a concise table and to identify potentially failed I/O devices.
-E	Displays the entire statistics of the device errors.	Allows you to view device information (manufacturer, model number, serial number, size, and errors).
-n	Displays the names in a descriptive form.	Allows you to identify devices with a descriptive display.
-x	Reports the extended drive statistics of individual drives. Statistics are displayed in a table format. Similar to the -e option, but differs in that it provides rate information.	Allows you to find internal devices and other I/O devices on the network whose performance is low.

The following example shows the iostat(1M) command output.

```
# iostat -En
c5t50000393D85129FAd0 Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Vendor: TOSHIBA  Product: MBF2300RC        Revision: 3706 Serial No:
EB25PC201AL6
Size: 300.00GB <300000000000 bytes>
Media Error: 0 Device Not Ready: 0 No Device: 0 Recoverable: 0
Illegal Request: 0 Predictive Failure Analysis: 0
c3t50000393D851FDAAd0 Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Vendor: TOSHIBA  Product: MBF2300RC        Revision: 3706 Serial No:
EB25PC201AMS
Size: 300.00GB <300000000000 bytes>
Media Error: 0 Device Not Ready: 0 No Device: 0 Recoverable: 0
Illegal Request: 0 Predictive Failure Analysis: 0
c4t50000393D822D2B6d0 Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Vendor: TOSHIBA  Product: MBF2300RC        Revision: 3706 Serial No:
EB25PC2015P8
Size: 300.00GB <300000000000 bytes>
Media Error: 0 Device Not Ready: 0 No Device: 0 Recoverable: 0
Illegal Request: 0 Predictive Failure Analysis: 0
c2t50000393E8001BB6d0 Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Vendor: TOSHIBA  Product: MBF2300RC        Revision: 3706 Serial No:
EB25PC301AV6
Size: 300.00GB <300000000000 bytes>
Media Error: 0 Device Not Ready: 0 No Device: 0 Recoverable: 0
Illegal Request: 0 Predictive Failure Analysis: 0
#
```

C.2 prtdiag(1M) Command

The prtdiag(1M) command displays information on system settings and diagnosis. Diagnosis information displays FRUs in the system that experienced errors.
The prtdiag(1M) command is in the following directory: /usr/platform/platform-name/sbin/.
The prtdiag(1M) command may display a slot number that differs from those supposed to be displayed according to other parts of this manual. This does not indicate a fault.
Table C-2 lists the options of the prtdiag(1M) command and how those options are useful for troubleshooting.

Table C-2 prtdiag(1M) command option

Option	Description	Application
No options	Displays a list of components.	Allows you to check the CPU information, the memory configuration, the mounted PCI Express (PCIe) cards, the OpenBootPROM version, the mode switch status, and the CPU operation mode.
-v	Displays information in detailed (Verbose) mode.	In addition to the content displayed when no option is specified, this option allows you to check detailed information of the PCIe card.

The following example shows the prtdiag(1M) command output.

```
# prtdiag -v
System Configuration:  Oracle Corporation  sun4v SPARC M10-4
Memory size: 64000 Megabytes

================================ Virtual CPUs ================================


CPU ID Frequency Implementation         Status
------ --------- ---------------------- -------
0      3000 MHz  SPARC64-X              on-line
1      3000 MHz  SPARC64-X              on-line
2      3000 MHz  SPARC64-X              on-line
3      3000 MHz  SPARC64-X              on-line
4      3000 MHz  SPARC64-X              on-line
5      3000 MHz  SPARC64-X              on-line
6      3000 MHz  SPARC64-X              on-line
7      3000 MHz  SPARC64-X              on-line
8      3000 MHz  SPARC64-X              on-line
9      3000 MHz  SPARC64-X              on-line
10     3000 MHz  SPARC64-X              on-line
```

```
11      3000 MHz  SPARC64-X              on-line
------------------------Ommitted-------------------------
59      3000 MHz  SPARC64-X              on-line
60      3000 MHz  SPARC64-X              on-line
61      3000 MHz  SPARC64-X              on-line
62      3000 MHz  SPARC64-X              on-line
63      3000 MHz  SPARC64-X              on-line

====================== Physical Memory Configuration ========================
Segment Table:
-----------------------------------------------------------------
Base            Segment  Interleave   Bank     Contains
Address         Size     Factor       Size     Modules
-----------------------------------------------------------------
0x0             32 GB    4            8 GB     /BB0/CMUL/CMP0/MEM00A
                                               /BB0/CMUL/CMP0/MEM01A
                                      8 GB     /BB0/CMUL/CMP0/MEM02A
                                               /BB0/CMUL/CMP0/MEM03A
                                      8 GB     /BB0/CMUL/CMP0/MEM04A
                                               /BB0/CMUL/CMP0/MEM05A
                                      8 GB     /BB0/CMUL/CMP0/MEM06A
                                               /BB0/CMUL/CMP0/MEM07A

0x20000000000   32 GB    4            8 GB     /BB0/CMUL/CMP1/MEM10A
                                               /BB0/CMUL/CMP1/MEM11A
                                      8 GB     /BB0/CMUL/CMP1/MEM12A
                                               /BB0/CMUL/CMP1/MEM13A
                                      8 GB     /BB0/CMUL/CMP1/MEM14A
                                               /BB0/CMUL/CMP1/MEM15A
                                      8 GB     /BB0/CMUL/CMP1/MEM16A
                                               /BB0/CMUL/CMP1/MEM17A


================================ IO Devices ================================
Slot +             Bus    Name +                              Model      Speed
Status             Type   Path
------------------------------------------------------------------------------
/BB0/CMUL/SASHBA   PCIE   scsi-pciex1000,87                   LSI,2308_2 5.0GTx8
                          /pci@8000/pci@4/pci@0/pci@0/scsi@0
/BB0/CMUL/NET0     PCIE   network-pciex14e4,1656                          2.5GTx1
                          /pci@8000/pci@4/pci@0/pci@9/network@0
/BB0/CMUL/NET1     PCIE   network-pciex14e4,1656                          2.5GTx1
                          /pci@8000/pci@4/pci@0/pci@9/network@0,1
/BB0/CMUL/NET2     PCIE   network-pciex14e4,1656                          2.5GTx1
                          /pci@8000/pci@4/pci@0/pci@a/network@0
/BB0/CMUL/NET3     PCIE   network-pciex14e4,1656                          2.5GTx1
                          /pci@8000/pci@4/pci@0/pci@a/network@0,1
/BB0/PCI0          PCIE   ethernet-pciex1077,8000                         5.0GTx4
                          /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
pci@0/pci@0/ethernet@0
/BB0/PCI0          PCIE   ethernet-pciex1077,8000                         5.0GTx4
                          /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
pci@0/pci@0/ethernet@0,1
/BB0/PCI0          PCIE   QLGC,qlc-pciex1077,8001             QLE8152    5.0GTx4
                          /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
```

```
pci@0/pci@0/QLGC,qlc@0,2
/BB0/PCI0          PCIE  QLGC,qlc-pciex1077,8001           QLE8152    5.0GTx4
                         /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
pci@0/pci@0/QLGC,qlc@0,3
/BB0/PCI0          PCIE  emlx-pciex10df,f100              LPe12002-M8-FJ2.5GTx8
                         /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
pci@0/pci@10/pci@0/pci@0/emlx@0
/BB0/PCI0          PCIE  emlx-pciex10df,f100              LPe12002-M8-FJ2.5GTx8
                         /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
pci@0/pci@10/pci@0/pci@0/emlx@0,1
/BB0/PCI0          PCIE  network-pciex108e,abcd            SUNW,pcie-qgc2.5GTx8
                         /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
pci@0/pci@11/pci@0/pci@0/network@0
/BB0/PCI0          PCIE  network-pciex108e,abcd            SUNW,pcie-qgc2.5GTx8
                         /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
pci@0/pci@11/pci@0/pci@0/network@0,1
/BB0/PCI0          PCIE  network-pciex108e,abcd            SUNW,pcie-qgc2.5GTx8
                         /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
pci@0/pci@11/pci@0/pci@0/network@0,2
/BB0/PCI0          PCIE  network-pciex108e,abcd            SUNW,pcie-qgc2.5GTx8
                         /pci@8100/pci@4/pci@0/pci@0/pci@0/pci@0/pci@0/pci@1/
pci@0/pci@11/pci@0/pci@0/network@0,3
MB                 PCIX  usb-pciclass,0c0310                              --
                         /pci@8000/pci@4/pci@0/pci@1/pci@0/usb@4
MB                 PCIX  usb-pciclass,0c0320                              --
                         /pci@8000/pci@4/pci@0/pci@1/pci@0/usb@4,1

============================ Environmental Status ============================

============================ FRU Status ============================
Location                          Name      Status
------------------------------------------------------
                                  SYS       enabled

============================ FW Version ============================
Version
------------------------------------------------------------
2002

====================== System PROM revisions ======================
Version
------------------------------------------------------------
OBP 4.34.0 2012/08/15 17:56

Chassis Serial Number
---------------------
2081203001
#
```

C.3 prtconf(1M) Command

The prtconf(1M) command displays a list of configured devices.
The prtconf(1M) command identifies hardware units recognized by Oracle Solaris. When a software application experiences a hardware-related issue even though there is no hardware error, this command allows you to check whether Oracle Solaris recognizes the hardware and whether the hardware drivers are loaded.
Table C-3 lists the options of the prtconf(1M) command and how those options are useful for troubleshooting.

Table C-3 prtconf(1M) command options

Option	Description	Application
No options	Displays a device tree for the devices recognized by Oracle Solaris.	A hardware device is regarded as operating normally if it is recognized. If the message "(driver not attached)" is displayed for a device or a sub-device, the driver for the device is corrupted or does not exist.
-D	The displayed content is similar to the case when there are no options, but is different in that it contains device driver names.	Allows you to check the driver necessary for Oracle Solaris to enable the device, or to view a list of drivers to be used.
-p	The display content is similar to the case when there are no options, but is different in that the display is simpler.	Allows you to view the devices as a simple list.
-V	Displays the version and date of the OpenBoot PROM firmware.	Allows you to check the firmware version quickly.

The following example shows the prtconf(1M) command output.

```
# prtconf
System Configuration:  Oracle Corporation  sun4v
Memory size: 131304 Megabytes
System Peripherals (Software Nodes):

ORCL,SPARC64-X
    scsi_vhci, instance #0
    packages (driver not attached)
        SUNW,builtin-drivers (driver not attached)
        SUNW,probe-error-handler (driver not attached)
        deblocker (driver not attached)
        disk-label (driver not attached)
        terminal-emulator (driver not attached)
        dropins (driver not attached)
        SUNW,asr (driver not attached)
        kbd-translator (driver not attached)
```

```
        obp-tftp (driver not attached)
        zfs-file-system (driver not attached)
        hsfs-file-system (driver not attached)
    chosen (driver not attached)
    openprom (driver not attached)
        client-services (driver not attached)
    options, instance #0
    aliases (driver not attached)
    memory (driver not attached)
    virtual-memory (driver not attached)
    iscsi-hba (driver not attached)
        disk (driver not attached)
    virtual-devices, instance #0
        console, instance #0
        rtc (driver not attached)
        flashprom (driver not attached)
        console (driver not attached)
        channel-devices, instance #0
            virtual-channel, instance #0
            virtual-channel, instance #3
            virtual-console-concentrator, instance #0
            virtual-network-switch, instance #0
            virtual-disk-server, instance #0
            virtual-channel-client, instance #1
            virtual-channel-client, instance #2
            pciv-communication, instance #0
            virtual-domain-service, instance #0
    cpu (driver not attached)
    cpu (driver not attached)
    cpu (driver not attached)
    cpu (driver not attached)
    cpu (driver not attached)
-----------------------Ommitted-------------------------
    cpu (driver not attached)
    cpu (driver not attached)
    cpu (driver not attached)
    pci, instance #0
        pci, instance #0
            pci, instance #1
                pci, instance #2
                    scsi, instance #0
                        iport, instance #8
                            smp, instance #3
                            disk, instance #8
                            enclosure, instance #3
                        iport, instance #11
                pci, instance #3
                    pci, instance #5
                        usb, instance #0
                        usb, instance #0
                            hub, instance #0
                pci, instance #4
                    network, instance #0
                    network, instance #1
                pci, instance #6
```

```
                    network, instance #2
                    network, instance #3
    pci, instance #1
        pci, instance #7
            pci, instance #8
                pci, instance #9
                pci, instance #10
                pci, instance #11
    pci, instance #2
        pci, instance #12
            pci, instance #13
                pci, instance #14
                pci, instance #15
                pci, instance #16
                pci, instance #17
    pci, instance #3
        pci, instance #18
            pci, instance #19
                pci, instance #20
                pci, instance #21
                pci, instance #22
                pci, instance #23
    pci, instance #4
        pci, instance #24
            pci, instance #25
                pci, instance #26
                    scsi, instance #1
                        iport, instance #6
                            smp, instance #1
                            disk, instance #6
                            enclosure, instance #1
                        iport, instance #9
                pci, instance #27
                    pci, instance #29
                        usb, instance #1
                        usb, instance #1
                            hub, instance #2
                pci, instance #28
                    network, instance #4
                    network, instance #5
                pci, instance #30
                    network, instance #6
                    network, instance #7
------------------------Ommitted------------------------
    pci, instance #22
        pci, instance #101
            pci, instance #102
                pci, instance #103
                pci, instance #104
    pci, instance #19
        pci, instance #105
    pci, instance #23
        pci, instance #106
            pci, instance #107
                pci, instance #108
```

```
                pci, instance #109
    pci-performance-counters, instance #0
    pci-performance-counters, instance #1
    pci-performance-counters, instance #2
    pci-performance-counters, instance #3
    pci-performance-counters, instance #4
    pci-performance-counters, instance #5
    pci-performance-counters, instance #6
    pci-performance-counters, instance #7
    pci-performance-counters, instance #8
    pci-performance-counters, instance #9
    pci-performance-counters, instance #10
    pci-performance-counters, instance #11
    pci-performance-counters, instance #12
    pci-performance-counters, instance #13
    pci-performance-counters, instance #14
    pci-performance-counters, instance #15
    pci-performance-counters, instance #16
    pci-performance-counters, instance #20
    pci-performance-counters, instance #17
    pci-performance-counters, instance #21
    pci-performance-counters, instance #18
    pci-performance-counters, instance #22
    pci-performance-counters, instance #19
    pci-performance-counters, instance #23
    ramdisk-root (driver not attached)
    os-io (driver not attached)
    fcoe, instance #0
    iscsi, instance #0
    pseudo, instance #0
#
```

C.4 netstat(1M) Command

The netstat(1M) command displays the network status and the protocol statistics. This command allows you to view a list of connections maintained by the host and their status. This command also allows you to check the packet statistics and error conditions of IP, TCP, and UDP.

Table C-4 lists the options of the netstat(1M) command and how those options can be applied to solving issues.

Table C-4 netstat(1M) command options

Option	Description	Application
-i	Displays the interface status. The displayed content includes information on incoming and outgoing packets, incoming and outgoing errors, collisions, and queues.	Allows you to view a concise overview of the network status.
-i interval	Specifying a numeric value after the -i option executes the netstat(1M) command at intervals of the specified number of seconds.	Identifies intermittent or long-term network events. You can view nighttime events at a glance by piping the netstat output to a file.
-p	Displays the media table.	Allows you to check the MAC addresses of the host on the subnetwork.
-r	Displays the routing table.	Allows you to check the routing information.
-n	Converts a host name into an IP address and then displays it.	Allows you to check the IP address instead of the host name.

The following example shows the netstat(1M) command output.

```
# netstat -p
Net to Media Table: IPv4
Device   IP Address               Mask      Flags      Phys Addr
------ -------------------- --------------- -------- ---------------
net0   4S-111-D0            255.255.255.255 SPLA     b0:99:28:98:30:36
net0   10.24.187.1          255.255.255.255          00:0a:b8:50:cd:42
net0   224.0.0.22           255.255.255.255 S        01:00:5e:00:00:16

Net to Media Table: IPv6
 If   Physical Address    Type      State       Destination/Mask
----- -----------------  ------- ------------ --------------------------
net0  33:33:00:00:00:01  other   REACHABLE    ff02::1
net0  33:33:00:00:00:02  other   REACHABLE    ff02::2
net0  33:33:00:01:00:02  other   REACHABLE    ff02::1:2
net0  33:33:00:00:00:16  other   REACHABLE    ff02::16
net0  b0:99:28:98:30:36  local   REACHABLE    fe80::b299:28ff:fe98:3036
net0  33:33:ff:98:30:36  other   REACHABLE    ff02::1:ff98:3036

#
```

C.5 ping(1M) Command

The ping(1M) command sends the ICMP ECHO_REQUEST packet to network hosts.

In certain configurations of the ping(1M) command, the command output allows you to identify a network link or a node that has experienced a problem. The destination host is specified by the variable: *hostname*.
Table C-5 lists the options of the ping(1M) command and how those options are useful for troubleshooting.

Table C-5 ping(1M) command options

Option	Description	Application
hostname	When you send a probe packet to *hostname*, a message is returned.	Allows you to confirm that a host is active on the network.
-g *hostname*	Forces the probe packet to go through the specified gateway.	Allows you to test the quality of individual routes by sending the packet to the target host via various routes specified.
-i *interface*	Specifies the interface to be used for sending and receiving a probe packet.	Allows you to easily check the secondary network interface.
-n	Converts a host name into an IP address and then displays it.	Allows you to check the IP address instead of the host name.
-s	ping is repeated at intervals of 1 second. Pressing the [Ctrl] + [C] keys stops ping, and then displays the statistics.	Allows you to check intermittent or long-term network events. You can view nighttime network events at one time by piping the ping output to a file.
-svR	Displays the routes that probe packets have passed through at intervals of 1 second.	Displays the routes and hop counts of probe packets, allowing you to compare multiple routes to identify any bottleneck.

The following example shows the ping(1M) command output.

```
# ping -s 10.24.187.50
PING 10.24.187.50: 56 data bytes
64 bytes from 10.24.187.50: icmp_seq=0. time=0.555 ms
64 bytes from 10.24.187.50: icmp_seq=1. time=0.400 ms
64 bytes from 10.24.187.50: icmp_seq=2. time=0.447 ms
^C
----10.24.187.50 PING Statistics----
3 packets transmitted, 3 packets received, 0% packet loss
round-trip (ms)  min/avg/max/stddev = 0.400/0.467/0.555/0.079
#
```

C.6 ps(1) Command

The ps(1) command displays a list of process statuses. When no options are specified, the command displays information of processes that have the same execution user ID as the executing user and the same control terminal.
If you specify an option, output information is controlled by the option.
Table C-6 lists the options of the ps(1M) command and how those options are useful for troubleshooting.

Table C-6 ps(1M) command options

Option	Description	Application
-e	Displays information on various processes.	Allows you to view the process IDs and files that can be executed.
-f	Generates a complete list.	Allows you to view process information such as the user ID, the parent process ID, the execution time, and the paths to the executed files.
-o *option*	Selects any items from those that can be configured as outputs. Options of pid, pcpu, pmem, and comm display the process ID, CPU usage, memory usage, and the corresponding executable files, respectively.	Allows you to check only the most important information. By knowing the resource usage rate, you can identify processes that potentially affect the system performance and cause hang ups.

The following example shows the ps(1M) command output.

```
# ps -eo pcpu,pid,comm|sort -rn
%CPU   PID COMMAND
 0.0   674 sort
 0.0   673 ps
 0.0   637 -bash
 0.0   636 login
 0.0   634 /usr/sbin/in.telnetd
 0.0   629 -bash
 0.0   613 /usr/bin/login
 0.0   602 /usr/lib/devchassis/devchassisd
 0.0   600 /opt/SUNWldm/bin/ldmd
 0.0   581 /usr/lib/inet/in.ndpd
 0.0   580 /sbin/dhcpagent
 0.0   577 /usr/lib/rmvolmgr
 0.0   548 /usr/sbin/auditd
 0.0   519 /usr/sbin/syslogd
 0.0   508 /usr/lib/ssh/sshd
 0.0   497 /usr/lib/fm/fmd/fmd
 0.0   487 /usr/lib/hal/hald-addon-cpufreq
 0.0   472 /usr/lib/autofs/automountd
```

```
  0.0   470 /usr/lib/autofs/automountd
  0.0   468 /usr/lib/inet/inetd
  0.0   458 hald-runner
  0.0   453 /usr/lib/hal/hald
  0.0   450 /usr/sbin/rpcbind
  0.0   421 /usr/lib/inet/proftpd
  0.0   413 /usr/sbin/cron
  0.0   382 /lib/svc/method/iscsid
  0.0   369 /usr/lib/efcode/sparcv9/efdaemon
  0.0   332 /usr/sbin/nscd
  0.0   297 /usr/lib/picl/picld
  0.0   272 /lib/inet/nwamd
  0.0   179 /usr/lib/devfsadm/devfsadmd
  0.0   176 /usr/lib/zones/zonestatd
  0.0   171 /usr/lib/ldoms/drd
  0.0   164 /usr/lib/ldoms/ldmad
  0.0   161 /usr/lib/utmpd
  0.0   158 /usr/lib/dbus-daemon
  0.0   128 /usr/lib/sysevent/syseventd
  0.0   112 /usr/lib/pfexecd
  0.0    98 /lib/inet/in.mpathd
  0.0    74 /lib/crypto/kcfd
  0.0    73 /lib/inet/ipmgmtd
  0.0    59 /usr/sbin/dlmgmtd
  0.0    38 /lib/inet/netcfgd
  0.0    13 /lib/svc/bin/svc.configd
  0.0    11 /lib/svc/bin/svc.startd
  0.0     8 vmtasks
  0.0     7 intrd
  0.0     6 kmem_task
  0.0     5 zpool-rpool
  0.0     3 fsflush
  0.0     2 pageout
  0.0     1 /usr/sbin/init
  0.0     0 sched
#
```

C.7 prstat(1M) Command

The prstat(1M) command repeatedly tests all the active processes on the system, and provides statistics based on the specified output mode and sorting order. The output of the prstat(1M) command is similar to that of the ps(1M) command.
Table C-7 lists the options of the prstat(1M) command and how those options can be applied to solving issues.

Table C-7 prstat(1M) command options

Option	Description	Application
No options	Displays a list of processes sorted in descending order of CPU resource consumption. The list is restricted by the height of the terminal window and the number of processes. The output is automatically updated every 5 seconds, and is stopped by pressing the [Ctrl] + [C] keys.	The output allows you to view process IDs, the User IDs, memory usage, status, CPU usage, and command names.
-n *number*	Restricts the number of lines in the output.	Limits the amount of displayed data, so that you can identify those processes that are consuming excessive amounts of resources.
-s *key*	Sorts the list by key parameter.	The list can be sorted by cpu (default), time, and size.
-v	Displays the information in detailed mode.	Allows you to view other parameters.

The following example shows the prstat(1M) command output.

```
# prstat -n 5 -s size
   PID USERNAME  SIZE   RSS STATE   PRI NICE      TIME  CPU PROCESS/NLWP
   497 root       55M   49M sleep    59    0   0:01:12 0.0% fmd/37
   600 root       41M   36M sleep    59    0   0:09:13 0.0% ldmd/13
    11 root       37M   33M sleep    59    0   0:00:17 0.0% svc.startd/12
   468 root       24M   12M sleep    59    0   0:00:00 0.0% inetd/4
    13 root       20M   19M sleep    59    0   0:00:37 0.0% svc.configd/24
Total: 49 processes, 669 lwps, load averages: 0.05, 0.05, 0.04
#
```

Appendix D

External Interface Specifications

This appendix describes the specifications of the external interface connectors and the switch for the XSCF provided on the SPARC M10-4/M10-4S and the crossbar box.

The external interface connectors provided on the SPARC M10-4/M10-4S are as follows.

- Serial Port
- USB Port
- SAS Port

The external interface connectors provided on the crossbar box are as follows.

- Serial Port
- USB Port

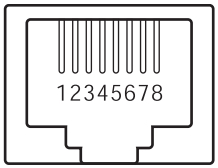
The switch for the XSCF that is provided on the SPARC M10-4/M10-4S will be as follows:

- RESET Switch

D.1 Serial Port

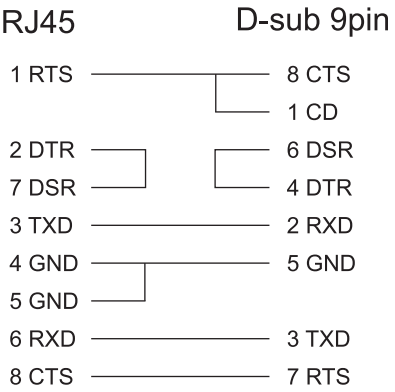
Table D-1 lists the specifications of the serial ports of the SPARC M10-4/M10-4S and the crossbar box.

Table D-1 Serial port

Pin arrangement	Pin number	Signal name	Input/Output	Description
	1	RTS	Output	Transmission request
	2	DTR	Output	Data terminal ready
	3	TXD	Output	Transmitted data
	4	GND	---	Ground
	5	GND	---	Ground
	6	RXD	Input	Received data
	7	DSR	Input	Data set ready
	8	CTS	Input	Transmission possible

D.1.1 Wire connection chart for serial cable

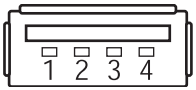
Figure D-1 Wire connection chart of serial cable



D.2 USB Port

Table D-2 lists the specifications of the USB port of the SPARC M10-4/M10-4S and the crossbar box.

Table D-2 USB port

Pin arrangement	Pin number	Signal name	Input/Output	Description
	1	VBUS	Output	Power supply
	2	-DATA	Input/ Output	Data
	3	+DATA	Input/ Output	Data
	4	GND	---	Ground

D.3 SAS Port

The SAS port of the SPARC M10-4/M10-4S is used to connect external devices with an SAS interface, such as a tape drive. The chassis has one SAS port on the rear. Consult a service engineer for more information about compatible devices.

D.4 RESET Switch

The RESET switch of the SPARC M10-4/M10-4S is an emergency switch to restart the XSCF. For how to use the RESET switch, see "17.2 Precautions concerning Using the RESET Switch" in the *Fujitsu M10/SPARC M10 Systems System Operation and Administration Guide*.
Figure D-2 indicates the RESET switch location of the SPARC M10-4 while Figure D-3 indicates the RESET switch location of the SPARC M10-4S. The RESET switch (A in the figure) is located on the rear of the chassis.

Figure D-2 RESET switch location (SPARC M10-4)

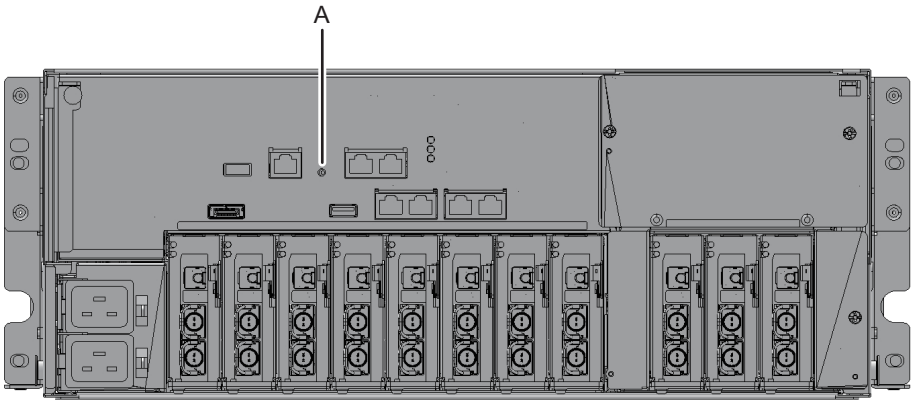
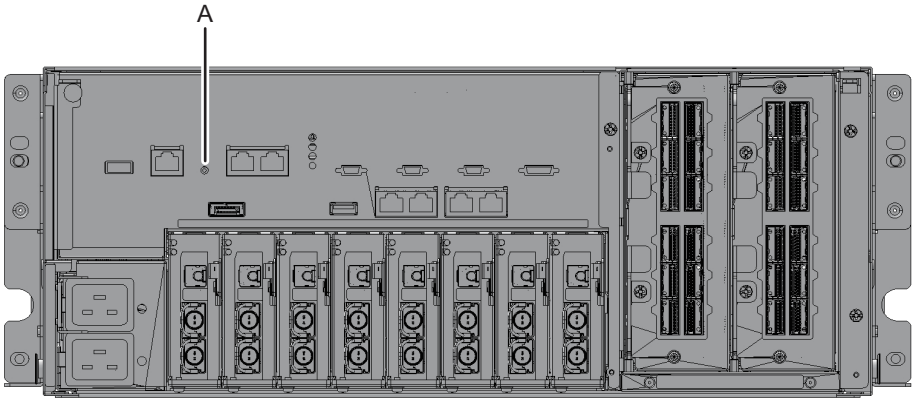


Figure D-3 RESET switch location (SPARC M10-4S)



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